

PATENT ABSTRACTS OF JAPAN

(11)Publication number : 11-184657

(43)Date of publication of application : 09.07.1999

(51)Int.Cl.

G06F 3/12

B41J 21/00

(21)Application number : 09-357522

(71)Applicant : FUJI XEROX CO LTD

(22)Date of filing : 25.12.1997

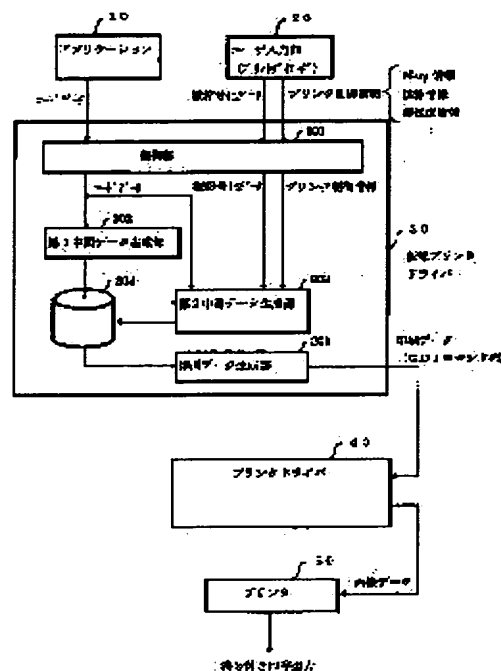
(72)Inventor : HORIKANE RYUICHI

(54) PRINT SYSTEM AND DATA PROCESSING METHOD THEREFOR

(57)Abstract:

PROBLEM TO BE SOLVED: To provide a print system and a data processing method therefor in which the data of various applications can be printed out of any printer.

SOLUTION: A virtual printer driver 30 is arranged between an application 10 and a printer driver 40. At the virtual printer driver 30, a first intermediate data generating part 302 generates first intermediate data capable of reproducing a graphic device independent (GDI) code from application data instructed to be printed from the application 10, and a second intermediate data generating part 303 generates second intermediate data by embedding a mechanically readable code into the first intermediate data. Further, a print data generating part 305 generates print data by reproducing the GDI code from the second intermediate data and sends them to the printer driver 40.



LEGAL STATUS

[Date of request for examination] 24.06.2002

[Date of sending the examiner's decision of rejection] 02.08.2005

[Kind of final disposal of application other than the examiner's decision of rejection or application converted registration]

[Date of final disposal for application]

[Patent number]

[Date of registration]

[Number of appeal against examiner's decision of rejection]

[Date of requesting appeal against examiner's decision of rejection]

[Date of extinction of right]

*** NOTICES ***

JPO and NCIP are not responsible for any damages caused by the use of this translation.

1. This document has been translated by computer. So the translation may not reflect the original precisely.
2. **** shows the word which can not be translated.
3. In the drawings, any words are not translated.

CLAIMS

[Claim(s)]

[Claim 1] In the printing system which prints the application data by which printing directions were carried out with application by the printer A 1st medium data origination means to create the 1st medium data from said application data, from said 1st medium data -- this -- the printing system characterized by providing a 2nd medium data origination means to create the 2nd medium data of the same data format as the 1st medium data, and a print-data creation means to create the print data which can be processed by said printer from said 2nd medium data.

[Claim 2] Said 2nd medium data origination means is a printing system according to claim 1 characterized by being constituted by merge means to create said 2nd medium data by compounding the machine-readable sign in which machine reading is possible to said 1st medium data.

[Claim 3] Said machine-readable sign is a printing system according to claim 2 characterized by being any one at least of each information on the identification information of said application data, a printing day entry, pagination information, providing agency host equipment information, and creation operation system name information.

[Claim 4] Said 2nd medium data origination means is a printing system according to claim 1 characterized by being constituted by data-conversion means to create said 2nd medium data by changing into the data corresponding to the printing control information to which said 1st medium data is directed along with said printing directions.

[Claim 5] Said printing control information is a printing system according to claim 4 characterized by being any one of the control information which directs N-up printing, amplification printing, or cutback printing to said application data.

[Claim 6] The printing system according to claim 1 carry out providing further a movement directive means to direct non-printed processing actuation other than the printing processing to said application data, and the non-printed processing control means which performs the non-printed processing actuation concerned while performing print-data creation processing by said print-data creation means when there are directions of said non-printed processing actuation with said movement directive means as the description.

[Claim 7] Said non-printed processing actuation is a printing system according to claim 6 characterized by being any one at least of the processing which registers said 2nd medium data into a server, the processing which carries out e-mail transmission of said 2nd medium data, and the processing actuation which carries out facsimile transmission of said 2nd medium data.

[Claim 8] while creating the 1st medium data from said application data in the data-processing approach of the printing system which prints the application data by which printing directions were carried out with application by the printer -- from said 1st medium data -- this -- the data-processing approach of the printing system characterized by to create the print data which can be processed by said printer from said 2nd medium data after creating the 2nd medium data of the same data format as the 1st medium data.

[Claim 9] Said 2nd medium data is the data-processing approach of the printing system according to claim 8 characterized by creating by compounding the machine-readable sign in which machine reading is possible to said 1st medium data.

[Claim 10] Said machine-readable sign is the data-processing approach of the printing system

according to claim 9 characterized by being any one at least of each information on the identification information of said application data, a printing day entry, pagination information, providing agency host equipment information, and creation operation system name information.

[Claim 11] Said 2nd medium data is the data-processing approach of the printing system according to claim 8 characterized by creating by changing into the data corresponding to the printing control information to which said 1st medium data is directed along with said printing directions.

[Claim 12] Said printing control information is the data-processing approach of the printing system according to claim 11 characterized by being any one of the control information which directs N-up printing, amplification printing, or cutback printing to said application data.

[Claim 13] The data-processing approach of the printing system according to claim 8 characterized by performing the non-printed processing actuation concerned, performing creation processing of said print data when non-printed processing actuation other than the printing processing to said application data is directed selectively and there are directions of this non-printed processing actuation.

[Claim 14] Said non-printed processing actuation is the data-processing approach of the printing system according to claim 13 characterized by being any one at least of the processing which registers said 2nd medium data into a server, the processing which carries out e-mail transmission of said 2nd medium data, and the processing actuation which carries out facsimile transmission of said 2nd medium data.

[Translation done.]

*** NOTICES ***

JPO and NCIP are not responsible for any damages caused by the use of this translation.

- 1.This document has been translated by computer. So the translation may not reflect the original precisely.
- 2.**** shows the word which can not be translated.
- 3.In the drawings, any words are not translated.

DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to amelioration of the data-processing approach for performing the printed output of the above-mentioned application data to any printers from all applications with a print facility in detail with respect to the printing system which prints the data by which printing directions were carried out with application by the printer.

[0002]

[Description of the Prior Art] In case the electronic file created and edited with application is printed, the system which also embeds the sign (machine-readable sign) in which machine reading is possible together, and prints it with the electronic file concerned is known. In this kind of system, there is a thing using the identification information of an electronic file as the above-mentioned machine-readable sign. In this case, after embedding the above-mentioned machine-readable sign and carrying out the printout of the text file by which printing directions were carried out from application, by reading and scanning this output form with a sign reader (scanner), the above-mentioned machine-readable sign is recognized, it matches with this machine-readable sign, and employment of managing an electronic file is attained.

[0003] The electronic document retrieval system of a publication is known by JP,8-50598,A as an example of the conventional system which has a sign addition print facility aiming at management of such a print file. In case it prints out an electronic document, this system outputs the additional information over the electronic document concerned to a form, simultaneously, is a system which stores an electronic document in a database, and is enabling retrieval of an electronic document by a bar code being used as additional information especially outputted to a form, and reading this bar code.

[0004]

[Problem(s) to be Solved by the Invention] In order to usually perform the printed output of the machine-readable sign to an electronic file using a certain printer in this kind represented by the above-mentioned electronic document retrieval system (JP,8-50598,A) of conventional system, it cannot be overemphasized that the printer driver which may drive this printer, and the application which suits the printer driver concerned are prepared.

[0005] This means that the consideration which can print the electronic file created with a certain application by any printers was not made in this kind of conventional system.

[0006] There was a trouble that construction of a system which the printer used is regulated by the application to be used, reads the machine-readable sign after embedding and printing a machine-readable sign to an electronic file as a result of regulating the application used by the printer used, and searches the electronic file concerned with a system conventionally by this was restricted remarkably.

[0007] Then, the object of this invention is to offer the printing system which can perform the printed output of an application data to any printers from all the applications that have a print facility, and its data-processing approach.

[0008] Moreover, another object of this invention is to offer the printing system which can perform the above-mentioned printed output, without choosing a printer from this application, and its data-processing approach, when embedding and printing a machine-readable sign on an application data.

[0009] Moreover, another object of this invention is to offer the printing system which can perform the above-mentioned printed output, without choosing a printer from this application, and its data-processing approach, when performing a N-up print etc. to the above-mentioned application data.

[0010] Furthermore, other objects of this invention are to offer the printing system which can perform non-printed processing actuation and its data-processing approach of the application data concerned in parallel to printing processing of the above-mentioned application data.

[0011]

[Means for Solving the Problem] In order to attain the above-mentioned object, invention of claim 1 In the printing system which prints the application data by which printing directions were carried out with application by the printer A 1st medium data origination means to create the 1st medium data from said application data, from said 1st medium data — this — it is characterized by providing a 2nd medium data origination means to create the 2nd medium data of the same data format as the 1st medium data, and a print-data creation means to create the print data which can be processed by said printer from said 2nd medium data.

[0012] Invention of claim 2 is characterized by constituting said 2nd medium data origination means by merge means to create said 2nd medium data by compounding the machine-readable sign in which machine reading is possible to said 1st medium data in invention of claim 1.

[0013] Invention of claim 3 is characterized by the number of said machine-readable signs being any one at least of each information on the identification information of said application data, a printing day entry, pagination information, providing agency host equipment information, and creation operation system name information in invention of claim 2.

[0014] Invention of claim 4 is characterized by constituting said 2nd medium data origination means by data-conversion means to create said 2nd medium data by changing into the data corresponding to the printing control information to which said 1st medium data is directed along with said printing directions in invention of claim 1.

[0015] Invention of claim 5 is characterized by said printing control information being any one of the control information which directs N-up printing, amplification printing, or cutback printing to said application data in invention of claim 4.

[0016] Invention of claim 6 carries out providing further a movement-directive means direct non-printed processing actuation other than the printing processing to said application data, and the non-printed processing control means which performs the non-printed processing actuation concerned while performing print-data creation processing by said print-data creation means when there are directions of said non-printed processing actuation with said movement directive means as the description in invention of claim 1.

[0017] Invention of claim 7 is characterized by being any one of the processing to which said non-printed processing actuation registers said 2nd medium data into a server, the processing which carries out e-mail transmission of said 2nd medium data, and the processing actuation to which facsimile transmission of said 2nd medium data is carried out at least in invention of claim 6.

[0018] while invention of claim 8 creates the 1st medium data from said application data in the data-processing approach of the printing system which prints the application data by which printing directions were carried out with application by the printer — from said 1st medium data — this — after creating the 2nd medium data of the same data format as the 1st medium data, it is characterized by to create the print data which can be processed by said printer from said 2nd medium data.

[0019] Invention of claim 9 is characterized by creating said 2nd medium data by compounding the machine-readable sign in which machine reading is possible to said 1st medium data in invention of claim 8.

[0020] Invention of claim 10 is characterized by the number of said machine-readable signs being any one at least of each information on the identification information of said application data, a printing day entry, pagination information, providing agency host equipment information, and creation operation system name information in invention of claim 9.

[0021] Invention of claim 11 is characterized by creating said 2nd medium data by changing into the data corresponding to the printing control information to which said 1st medium data is

directed along with said printing directions in invention of claim 8.

[0022] Invention of claim 12 is characterized by said printing control information being any one of the control information which directs N-up printing, amplification printing, or cutback printing to said application data in invention of claim 11.

[0023] In invention of claim 8, invention of claim 13 is characterized by performing the non-printed processing actuation concerned, performing creation processing of said print data, when non-printed processing actuation other than the printing processing to said application data is directed selectively and there are directions of this non-printed processing actuation.

[0024] Invention of claim 14 is characterized by being any one of the processing to which said non-printed processing actuation registers said 2nd medium data into a server, the processing which carries out e-mail transmission of said 2nd medium data, and the processing actuation to which facsimile transmission of said 2nd medium data is carried out at least in invention of claim 13.

[0025]

[Embodiment of the Invention] Hereafter, the gestalt of 1 operation of this invention is explained to a detail with reference to an accompanying drawing. Drawing 1 is the block diagram showing the outline configuration of the printing system concerning the gestalt of 1 operation of this invention. This printing system With the application 10 and application 10 which have data editing and a print facility at least The code data of the electronic file by which printing directions were carried out The machine-readable sign which embeds by (the content of the electronic file) and is printed The printing conditions inputted from the user input section 20 which inputs printing conditions, such as coded data-ed for obtaining and a printing parameter (printer control information) of this electronic file, and the user input section 20 are followed. The print data in which printing processing is possible by the printer 50 from the above-mentioned code data By actuation control of the virtual printer driver 30 to generate, the printer driver 40 which drives a printer 50 based on the print data outputted from this virtual printer driver 30, and this printer driver 40 The printer 50 which carries out the printed output of the above-mentioned print data is provided, and it is constituted.

[0026] The virtual printer driver 30 prepared between application 10 and a printer driver 40 here The above-mentioned printing conditions of being inputted from the 1st medium data generation section 302 which generates the 1st medium data from the above-mentioned code data inputted from application 10, and the user input section 20 are followed. The 2nd medium data of the same data format as the 1st medium data concerned from the above-mentioned 1st medium data The print data which a printer 50 can printing process are generated from the 2nd medium data stored in the data storage section 304 which stores the 2nd medium data generation section 303, the 1st medium data, and the 2nd medium data to generate, and the data storage section 304. The control section 301 which controls in generalization the print-data generation section 305 sent out to a printer driver 40, the above-mentioned 1st medium data generation section 302, the 2nd medium data generation section 303, the data storage section 304, and the print-data generation section 305 is provided, and it is constituted.

[0027] Next, in this printing system, the outline actuation in the case of printing the electronic file by which printing directions were carried out from application 10 is explained with reference to the flow chart shown in drawing 2.

[0028] In this printing system, when it is going to print the electronic file of the arbitration generated by the application 10 concerned from application 10, a user publishes the printing directions to that electronic file that it is going to print (step 201). By publishing these printing directions, in the user input section 20, a print dialog as shown, for example in drawing 3 is displayed, and it shifts to the processing which receives setting out of the printing conditions of an electronic file that the above-mentioned printing directions were made (step 202). there be the size of a form besides the coded data-ed for obtain the machine-readable sign embed to the data of an electronic file with which the printing directions as requirements for a printing condition which can be input be made from the user input section 20 using the above-mentioned print dialog to the printing directions from application 10 (data to encode) and the sense, the propriety of N-up printing or amplification/cutback printing, and various information on margin information so that

the example of drawing 3 may also show.

[0029] Completion of setting-out actuation of the printing conditions by this print dialog inputs into the virtual printer driver 30 a printing parameter, coded data-ed, etc. to which the code data of an electronic file with which the above-mentioned printing directions were made were set by the user from the above-mentioned user input section 20 again from the above-mentioned application 10, respectively.

[0030] In the virtual printer driver 30, first, by the 1st medium data generation section 302, the 1st medium data are generated from the above-mentioned code data sent from application 10 (step 211), and it stores in the data storage section 304. The 1st medium data have the format which can reproduce the GDI (Graphic Device Independent) command in step 213 mentioned later (rendering). As an example of this 1st medium data, various meta files, such as WMF (Windows Meta File) and EMF (Enhanced Meta File), are raised (Windows is the trademark of U.S. Microsoft). In addition, about the 1st medium data, if the requirements that the GDI command is reproducible are satisfied, even if it is the format for which it opted uniquely, it will not interfere.

[0031] On the other hand, the above-mentioned printing condition information which the user set up is inputted into the 2nd medium data generation section 303 from the user input section 20. The 2nd medium data generation section 303 generates the 2nd medium data according to the above-mentioned printing conditions from the 1st medium data stored in the data storage section 304 (step 212), and stores them in the data storage section 304.

[0032] One of the processings of this step 212 has the processing which embeds this machine-readable sign to the 1st medium data after encoding the coded data-ed inputted from the user input section 20 as a machine-readable sign, and generates these 1st medium data and isomorphism-type data (the 2nd medium data). Moreover, there is processing which carries out data conversion of the 1st medium data to the 1st medium data concerned and the data (the 2nd medium data) of business, such as N-up printing of an isomorphism type and amplification/cutback printing, as other one based on the printing parameters (N-up printing, amplification/cutback printing, etc.) inputted from the user input section 20.

[0033] Next, the print-data generation section 305 reproduces GDI series of commands from the data stored in the 2nd medium data in the data storage section 304, and sends it out to a printer driver 40 with those printing directions by using this GDI series of commands as print data (step 213). When it consists of WMF(s) and EMF(s) which the 2nd medium data mentioned above about this processing, it can print by Windows API.

[0034] A printer driver 40 starts a printer 50 with the printing directions sent from the print-data generation section 305, and outputs the above-mentioned print data (GDI series of commands) to a printer 50 (step 221). Furthermore, a printer 50 carries out the printed output of the above-mentioned print data.

[0035] Thus, the printing system of this invention arranges the virtual printer driver 30 (application realizes) between application 10 and a printer driver 40 (on an interface), first generates the medium data which can reproduce the GDI code in this virtual printer driver 30 from the application data by which printing directions were carried out from application 10, by reproducing the GDI code based on this medium data further, generates print data and gives them to a printer driver 40. That is, in the printing system of this invention, the virtual printer driver 30 will hit application, if it sees from an application side and will see from a printer driver 40 side in a printer driver. By making such a virtual printer driver 30 intervene, the printer output of various gestalten, such as embedding printing of a machine reading sign, N-up printing, or amplification/cutback printing, is realizable from all the applications 10 equipped with the print facility to any printers 50.

[0036] Next, the example of the printing processing actuation in this printing system is explained in full detail with reference to the flow chart shown in drawing 4. Drawing 5 is outline block diagram **** of this printing system used in order to explain the printing processing which met the flow chart shown in this drawing 4. In addition, especially the flow chart shown in this drawing 4 corresponds to the printing processing in the case of embedding and printing a machine-readable sign from a user to the electronic file by which printing directions were carried out. In this case, as the 2nd medium data generation section 303 in the virtual printer driver 30, as shown in drawing 6, the thing (it expresses with sign 303A) possessing the code data analysis section 3031, the

embedding data generation section 3032, and the merge-application section 3033 is used.

[0037] As shown in drawing 5 , the virtual printer driver 30 exists between the printer drivers 40 by which this printing system controls application 10 and a printer 50, and, the virtual printer driver 30, application 10, and in between, OS (operating system) intervenes further. Application 10 has the function which displays a printing dialog as shown at the time of printing of the electronic file generated by the application 10 concerned, for example, this drawing upper part. In the printing dialog of this application 10, the print dialog of the user input section 20 opens by choosing a property. It seems that this print dialog is shown in drawing 3 . A user inputs a printing parameter, data (coded data-ed) which it is going to encode of the electronic file which it is going to print from the above-mentioned application 10 using this print dialog.

[0038] In the above-mentioned application 10, while editing a certain electronic file (step 401), the virtual printer driver 30 and printer driver 40 which intervene between this application 10 and printer 50 are in an idle state, respectively. At this time, OS which controls activation of the above-mentioned application 10 is supervising whether a certain event was directed from the above-mentioned application 10 (step 411).

[0039] In this condition, if there are printing directions from the above-mentioned application 10 to the electronic file under above-mentioned edit (step 402), in OS, an event occurs, and it recognizes that that event is printing directions (step 411 YES), and motive directions are sent out to the virtual printer driver 30 (step 412). Thereby, it will be in activation status, and first, the virtual printer driver 30 processes initialization (step 421), subsequently to a printer driver 40 sends out starting directions (step 422), and waits for the advice of the completion of initialization from a printer driver 40 after that (step 423).

[0040] On the other hand, a printer driver 40 returns advice of the completion of initialization to the virtual printer driver 30, after processing initialization with the starting directions from the virtual printer driver 30 (step 431). The virtual printer driver 30 will notify the completion of initialization to OS, if the above-mentioned advice of the completion of initialization is received (step 423 YES).

[0041] If it is, on the other hand, supervising whether there is any advice of the completion of initialization from this virtual printer driver 30 by OS after starting command sending out to the above-mentioned virtual printer driver 30, and advice of the completion of initialization is received from the virtual printer driver 30 in this condition (step 413 YES), advice of a printing preparation completion is sent out to application 10 by recognition that preparation of the virtual printer driver 30 concerned completed (step 414).

[0042] Moreover, in application 10, after emitting printing directions in step 402, it is supervising whether processing of OS was completed, and judges that processing of (step 403 YES) and OS was completed by receiving advice of a printing preparation completion from OS, and code data are outputted to the OS (step 404).

[0043] In OS which received this code data, predetermined code processing service is carried out (step 415), and the code data after this service processing are sent out to the virtual printer driver 30.

[0044] As processing of the above-mentioned step 404 -> step 415 mentioned above, a print dialog (the user input section 20) as shown in drawing 3 based on the printing directions from application 10 displays, and it corresponds to the processing which inputs by the user using the above-mentioned print dialog in the printing parameter to the code (encoded code) and the above-mentioned code data which it is going to encode to the content of a text file for [which is inputted from application 10 by the above-mentioned printing directions] printing (code data). The encoded code and printing parameter which are inputted using the code data inputted from these applications 10 or the above-mentioned print dialog are outputted to the virtual printer driver 30 through the above-mentioned code processing service.

[0045] In the virtual printer driver 30, if the code data outputted by processing of the above-mentioned step 415 in OS are received (step 424), first, by the 1st medium data generation section 302, the 1st medium data which change by format reproducible in the GDI code in subsequent processing are created based on the received code data (step 425), and it stores in the data storage section 304.

[0046] Moreover, in 2nd medium data generation section 303A (refer to drawing 6) of the virtual printer driver 30, while the above-mentioned code data received from OS are analyzed in the code data-analysis section 3031 and this analysis result is sent out to the merge-application section 3033, the machine-readable sign which should be embedded to the code data by which printing directions were carried out [above-mentioned] based on the coded data-ed inputted from the user input section 20 in the embedding data generation section 3032 is generated (step 426), and it sends out to the merge-application section 3033.

[0047] Furthermore, after the merge-application section 3033 reads the 1st medium data from the data storage section 304, by merging into the above-mentioned 1st medium data the machine-readable sign generated at the above-mentioned step 426 according to the printing parameter into which it is inputted from the analysis result and the user input section 20 in the code data analysis section 3031, it generates the 2nd medium data (step 427), and stores them in the data storage section 304. Here, the 2nd medium data consist of the same formats as the above-mentioned 1st medium data.

[0048] Then, in the virtual printer driver 30, for reproducing GDI series of commands from the above-mentioned 2nd medium data, print data are generated and these print data are sent out to a printer driver 40 with printing directions by the print-data generation section 305 (step 428).

[0049] If printing directions and print data (GDI series of commands) are received from the virtual printer driver 30 (step 432), a printer driver 40 will start a printer 50 and will output the print data concerned (step 434). Furthermore, a printer 50 carries out the printed output of the print data received from the printer driver 40.

[0050] A printer driver 40 notifies the completion of printing to the virtual printer driver 30 after sending out of the print data to a printer 50. If the above-mentioned advice of the completion of printing is received from a printer driver 40, the virtual printer driver 30 will recognize it as what the processing by the printer driver 40 completed, and will notify the completion of printing to OS (step 429).

[0051] Moreover, it is supervising whether processing of the virtual printer driver 30 completed OS after the above-mentioned code processing service activation, and judges that processing of (step 416) and the virtual printer driver 30 was completed by receiving the above-mentioned advice of the completion of printing from the virtual printer driver 30 during this monitor, and actuation is ended (step 417). Moreover, in that case, to application 10, it notifies that OS processing was completed, and returns to the above-mentioned event monitor loop formation henceforth. On the other hand, in application 10, it supervises whether OS processing was completed after the output of the above-mentioned code data, and (step 405) and a series of printing processings are ended by receiving the above-mentioned advice of the completion of OS processing from OS.

[0052] The virtual printer driver 30 is processing the following (a) - (c) in steps 424-428 so that explanation of processing of a up Norikazu ream may also show.

[0053] (a) The GDI code generates the refreshable 1st medium data from the electronic file which had printing directions from application 10.

[0054] (b) Generate the 2nd medium data of the same format as the 1st medium data concerned by merging this machine-readable sign into the above-mentioned 1st medium data after generating a machine-readable sign from the coded data-ed inputted with the above-mentioned printing directions.

[0055] (c) By reproducing the GDI code train from the 2nd medium data, generate print data and carry out printing directions at a printer driver 40.

[0056] This (a) Since the machine-readable sign set up by the user from the user input section 20 is merged into the print data after processing of - (c), the printed output which the above-mentioned machine-readable sign embedded and was printed by the above-mentioned application data can be obtained by carrying out the printed output of these print data by the printer 50 through a printer driver 40.

[0057] As an example, drawing 7 shows the printing image in the case of embedding and printing a machine-readable sign (this drawing continuous tone part) from each application (10) of a word processor, a spreadsheet, and a drawing tool to each electronic file.

[0058] In the printing processing in this case, first, if a user performs printing of an electronic file

with each above-mentioned application 10, a print dialog as shown in drawing 3 will be displayed. Here, data (coded data-ed) to encode as a machine-readable sign are inputted. Especially, on the dialog in drawing 3, the example which encodes a "integer" as data type and encodes "1234567890" as a value is shown. If the "O.K." carbon button on a dialog is pushed after inputting coded data-ed Coding of the above-mentioned coded data-ed is performed within the virtual printer driver 30. After this coded data was merged into the 1st medium data and the 2nd medium data were generated, Furthermore, this 2nd medium data turns into print data reproduced by the GDI code train, a printer driver 40 is passed, and the printed output which coded data as shown in drawing 7 by the printer 50 embeds and by which it was printed can be obtained.

[0059] Thus, to the electronic file in it, if it is the application 10 which is equipped with a print facility according to the configuration of this invention which has the virtual printer driver 30 which is arranged between application 10 and a printer driver 40, and performs embedding of a machine-readable sign on refreshable medium data by the GDI code train, also when what kind of printer 50 is used, embedding printing of a machine-readable sign can be performed from all applications, such as a word processor as shown in drawing 7, a spreadsheet, and a drawing tool.

[0060] In addition, a bar code, data glyph, etc. can be used as a machine-readable sign embedded and printed by this printing system. Moreover, as a content of this machine-readable sign, the registration ID at the time of registering the electronic file for printing into a server can be considered so that it may mention later. In this case, on the output form which embedded and printed the machine-readable sign, the above-mentioned machine-readable sign is read with a scanner, and it scans, and Registration ID is recognized and employment of searching the electronic file corresponding to the registration ID concerned from the above-mentioned server is attained from that reading result.

[0061] As other examples of a machine-readable sign, various information, such as printing time of the identifier of the printed electronic file, the supplying agency host device name of this electronic file, OS name that created this electronic file or a user name, and this electronic file, and pagination, can be considered. Furthermore, it is applicable also to the application of spacing and printing alphabetic characters, such as "important" and a "top secret", to the electronic file printed on the output form (Watermark) etc.

[0062] Moreover, although he is trying to send out to a printer driver 40 in this example after merging a machine-readable sign into the 1st medium data beforehand and generating the 2nd medium data, you may make it send out a machine-readable sign as GDI series of commands instead of this processing in the processing which sends printing directions to a printer driver 40.

[0063] By the way, it is the processing which embedding printing processing of the above-mentioned machine-readable sign does not perform data conversion of the application data itself, but adds and prints additional information, such as the server registration ID, to this application data. In addition, the printing system of this invention can also be considered as the configuration which carries out data conversion of the application data itself, and carries out a printout. As an example of the printing processing accompanied by such data conversion, N-up printing, amplification, or cutback printing can be considered. Moreover, processing of generating a certain file which has an available format by the virtual printer driver 30 is also equivalent to this. What is necessary is just to use the thing (for it to express with sign 303B) possessing the code data analysis section 3031 and the data-conversion section 3034 as the 2nd medium data generation section 303 in the virtual printer driver 30, as shown in drawing 8 in order to add such a printing processing facility.

[0064] It explains briefly [below] about the printing processing in the printing system which adopts 2nd medium data generation section 303B, and changes in the virtual printer driver 30. In addition, printing processing by the printing system in this case is realizable by permuting by processing which describes processing of step 424 by the virtual printer driver 30 to the step 427 below among the processings which met the flow chart shown in drawing 4 in the printing system which embeds and prints additional information, such as a machine-readable sign.

[0065] Now, in the printing system using 2nd medium data generation section 303B as shown in drawing 8, after printing directions were made from application 10, N-up printing should be directed on the print dialog (refer to drawing 3). Completion of the setting-out actuation by this

print dialog inputs into the virtual printer driver 30 the printing parameter with which the code data of the electronic file by which printing directions were carried out at this time direct the above-mentioned N-up printing from the user input section 20 again from application 10, respectively.

[0066] In the virtual printer driver 30, if the code data inputted from application 10 are received, first, by the 1st medium data generation section 302, the 1st medium data which change by format reproducible in the GDI code in subsequent processing are created based on the received code data, and it stores in the data storage section 304.

[0067] Moreover, in 2nd medium data generation section 303B (refer to drawing 8) of the virtual printer driver 30, while the above-mentioned code data received from application 10 are analyzed in the code data analysis section 3031 and this analysis result is sent out to the data-conversion section 3034, the printing parameter inputted from the user input section 20 is incorporated in the data-conversion section 3034 concerned.

[0068] Then, referring to the analysis result in the code data analysis section 3031, after reading the 1st medium data from the data storage section 304, by changing the above-mentioned 1st medium data into the data for N-up printing according to the printing parameter inputted from the user input section 20, the data-conversion section 3034 generates the 2nd medium data, and stores them in the data storage section 304.

[0069] Furthermore, in the virtual printer driver 30, by reproducing GDI series of commands from the above-mentioned 2nd medium data, ***** is generated and these print data are sent out to a printer driver 40 with printing directions by the print-data generation section 305.

[0070] If a printer driver 40 receives printing directions and print data (GDI series of commands) from the virtual printer driver 30, a printer 50 will be started, the print data concerned will be outputted, and a printer 50 will carry out the printed output of the print data received from the printer driver 40 further.

[0071] Drawing 8 shows the example of a printed output based on the above-mentioned printing processing. In this example, when the electronic file of each [these] ** page is usually printed by each output form (two sheets), respectively when 1-up printing is directed for example, to the electronic file which consists of 2 pages, and 2-up printing is directed to the above-mentioned electronic file, the electronic file for above-mentioned 2 pages is printed by the output form of one sheet.

[0072] When using by others, cutback / amplification printing or the virtual printer driver 30 and obtaining a certain data of a sake, even if it faces, it can be coped with by same processing.

[printing / this / N-up]

[0073] In addition, although the example described previously described what carries out independently processing which adds and prints additional information to the application data by which printing directions were carried out, and processing which changes this application data into the data for N-up printing, or a cutback or amplification printing, the system configuration which used these processings together is also possible.

[0074] Next, the gestalt of other operations of this invention is explained. Drawing 10 is the block diagram showing the outline configuration of the printing system concerning the gestalt of other operations of this invention, and gives the same sign to the part which achieves the same function as each part of the printing system shown in drawing 1 .

[0075] In this printing system, the non-printed processing control section 306 which controls processings other than this printing processing is formed in virtual printer driver 30A at the time of printing of an application data by which printing directions were carried out from application 10. This non-printed processing control section 306 is connected with external devices, such as a server 60, through the predetermined interface. Outline actuation of this printing system is explained with reference to the flow chart shown in drawing 11 R> 1. In addition, also in the flow chart shown in this drawing 11 , the same sign is attached about processing by the system shown in drawing 1 , and the same processing.

[0076] In this printing system, when it is going to print the electronic file of arbitration from application 10, a user publishes the printing directions to that electronic file that it is going to print (step 201). By publishing these printing directions, in the user input section 20, a print dialog as shown, for example in drawing 3 is displayed, and it shifts to the processing which receives setting

out of the printing conditions relevant to the electronic file by which the above-mentioned printing directions were made (step 202).

[0077] Moreover, in this printing system, starting directions of non-printed processings other than the printing processing to the electronic file which carried out [above-mentioned] printing directions by the predetermined input function are published, using a dialog (not shown) other than the above-mentioned print dialog (step 203).

[0078] Completion of the above-mentioned printing conditioning actuation and the above-mentioned non-printed processing starting directions actuation inputs into the virtual printer driver 30 printing parameters and coded data-ed, such as N-up printing to which the code data of an electronic file with which the above-mentioned printing directions were made were set by the user from the above-mentioned user input section 20 again, from the above-mentioned application 10, respectively. At this time, the above-mentioned non-printed processing starting directions information is also included in the information inputted from the user input section 20.

[0079] In virtual printer driver 30A, in the 1st medium data generation section 302, the 1st medium data are first generated from the above-mentioned code data sent from application 10 (step 211), and it stores in the data storage section 304. On the other hand, the above-mentioned printing condition information which the user set up is inputted into the 2nd medium data generation section 303 from the user input section 20. The 2nd medium data generation section 303 generates the 2nd medium data according to the above-mentioned printing conditions from the 1st medium data generation section 303 stored in the data storage section 304 (step 212), and stores them in the data storage section 304.

[0080] Next, the print-data generation section 305 reproduces GDI series of commands from the data stored in the 2nd medium data in the data storage section 304, and sends it out to a printer driver 40 with those printing directions by using this GDI series of commands as print data (step 213).

[0081] A printer driver 40 starts a printer 50 with the printing directions sent from the print-data generation section 305, and outputs the print data (GDI series of commands) sent with the printing directions concerned to a printer 50 (step 221). Furthermore, a printer 50 carries out the printed output of the print data.

[0082] Moreover, after sending out of the printing directions in step 213, by the control section 301 of virtual printer driver 30A, when it confirms whether starting directions of non-printed processing are inputted from the user input section 20 (step 214) and the starting directions concerned are not inputted (step 214 NO), processing is ended. On the other hand, when starting directions of non-printed processing are inputted (step 214 YES), the non-printed processing control section 306 is started, and non-printed processing by which the starting directions concerned are made is performed (step 215).

[0083] In the printing system shown in drawing 10 , in registering the data concerned into a server 60 with printing processing of an application data, in the above-mentioned step 203, it inputs the directions information which means "server registration" as non-printed processing starting directions. At this time, by the control section 301 of virtual printer driver 30A, it recognizes that the starting directions of "the server registration" are carried out based on the directions information concerned in the above-mentioned step 214, and server registration starting is notified to the non-printed processing processing control section 306. By receiving the above-mentioned advice, the non-printed processing control section 306 reads the 2nd medium data stored in the data storage section 304, adds the registration ID specified for example, using the above-mentioned print dialog in the 2nd medium data concerned, and registers it into a server 60.

[0084] In addition, if a mail server and facsimile apparatus are connected as an external device and the control function of these external devices is added to the non-printed processing control section 306, printing the electronic file which corresponds with the printing directions from application 10, e-mail transmission of the electronic file concerned can be carried out through a mail server, or the electronic file concerned is transmitted to facsimile apparatus, and it can respond to various processings of carrying out facsimile transmission at a phase hand.

[0085]

[Effect of the Invention] Since the medium data which can reproduce the print data which suit

printing processing of a printer are generated from the application data by which printing directions were carried out from application, the above-mentioned print data are further reproduced from this medium data and it was made to send out to a printer according to this invention as explained above, the printed output of the data of various applications which have a print facility can be carried out from any printers.

[0086] Moreover, in this invention, since the processing facility which merges a machine-readable sign on the above-mentioned medium data was added, also when embedding and printing a machine-readable sign on an application data, the printed output concerned can be performed, without choosing a printer.

[0087] Moreover, in this invention, since the function which carries out data conversion of the application data by which printing directions were carried out from application on the above-mentioned medium data was added, also when performing N-up, amplification/reduction-printing, etc. to the above-mentioned application data, the printed output concerned can be performed, without choosing a printer.

[0088] Furthermore, in this invention, since the function to perform non-printed processing actuation was added performing print-data creation processing, in parallel to printing processing of an application data, non-printed processing actuation of server registration, facsimile transmission, etc. about this application data can be performed.

[Translation done.]

*** NOTICES ***

JPO and NCIP1 are not responsible for any damages caused by the use of this translation.

- 1.This document has been translated by computer. So the translation may not reflect the original precisely.**
- 2.**** shows the word which can not be translated.**
- 3.In the drawings, any words are not translated.**

TECHNICAL FIELD

[Field of the Invention] This invention relates to amelioration of the data-processing approach for performing the printed output of the above-mentioned application data to any printers from all applications with a print facility in detail with respect to the printing system which prints the data by which printing directions were carried out with application by the printer.

[Translation done.]

*** NOTICES ***

JPO and NCIP are not responsible for any damages caused by the use of this translation.

- 1.This document has been translated by computer. So the translation may not reflect the original precisely.
- 2.**** shows the word which can not be translated.
- 3.In the drawings, any words are not translated.

PRIOR ART

[Description of the Prior Art] In case the electronic file created and edited with application is printed, the system which also embeds the sign (machine-readable sign) in which machine reading is possible together, and prints it with the electronic file concerned is known. In this kind of system, there is a thing using the identification information of an electronic file as the above-mentioned machine-readable sign. In this case, after embedding the above-mentioned machine-readable sign and carrying out the printout of the text file by which printing directions were carried out from application, by reading and scanning this output form with a sign reader (scanner), the above-mentioned machine-readable sign is recognized, it matches with this machine-readable sign, and employment of managing an electronic file is attained.

[0003] The electronic document retrieval system of a publication is known by JP,8-50598,A as an example of the conventional system which has a sign addition print facility aiming at management of such a print file. In case it prints out an electronic document, this system outputs the additional information over the electronic document concerned to a form, simultaneously, is a system which stores an electronic document in a database, and is enabling retrieval of an electronic document by a bar code being used as additional information especially outputted to a form, and reading this bar code.

[Translation done.]

*** NOTICES ***

JPO and NCIP are not responsible for any damages caused by the use of this translation.

1. This document has been translated by computer. So the translation may not reflect the original precisely.
2. **** shows the word which can not be translated.
3. In the drawings, any words are not translated.

EFFECT OF THE INVENTION

[Effect of the Invention] Since the medium data which can reproduce the print data which suit printing processing of a printer are generated from the application data by which printing directions were carried out from application, the above-mentioned print data are further reproduced from this medium data and it was made to send out to a printer according to this invention as explained above, the printed output of the data of various applications which have a print facility can be carried out from any printers.

[0086] Moreover, in this invention, since the processing facility which merges a machine-readable sign on the above-mentioned medium data was added, also when embedding and printing a machine-readable sign on an application data, the printed output concerned can be performed, without choosing a printer.

[0087] Moreover, in this invention, since the function which carries out data conversion of the application data by which printing directions were carried out from application on the above-mentioned medium data was added, also when performing N-up, amplification/reduction-printing, etc. to the above-mentioned application data, the printed output concerned can be performed, without choosing a printer.

[0088] Furthermore, in this invention, since the function to perform non-printed processing actuation was added performing print-data creation processing, in parallel to printing processing of an application data, non-printed processing actuation of server registration, facsimile transmission, etc. about this application data can be performed.

[Translation done.]

*** NOTICES ***

JPO and NCIP are not responsible for any damages caused by the use of this translation.

1. This document has been translated by computer. So the translation may not reflect the original precisely.
2. **** shows the word which can not be translated.
3. In the drawings, any words are not translated.

TECHNICAL PROBLEM

[Problem(s) to be Solved by the Invention] In order to usually perform the printed output of the machine-readable sign to an electronic file using a certain printer in this kind represented by the above-mentioned electronic document retrieval system (JP,8-50598,A) of conventional system, it cannot be overemphasized that the printer driver which may drive this printer, and the application which suits the printer driver concerned are prepared.

[0005] This means that the consideration which can print the electronic file created with a certain application by any printers was not made in this kind of conventional system.

[0006] There was a trouble that construction of a system which the printer used is regulated by the application to be used, reads the machine-readable sign after embedding and printing a machine-readable sign to an electronic file as a result of regulating the application used by the printer used, and searches the electronic file concerned with a system conventionally by this was restricted remarkably.

[0007] Then, the object of this invention is to offer the printing system which can perform the printed output of an application data to any printers from all the applications that have a print facility, and its data-processing approach.

[0008] Moreover, another object of this invention is to offer the printing system which can perform the above-mentioned printed output, without choosing a printer from this application, and its data-processing approach, when embedding and printing a machine-readable sign on an application data.

[0009] Moreover, another object of this invention is to offer the printing system which can perform the above-mentioned printed output, without choosing a printer from this application, and its data-processing approach, when performing a N-up print etc. to the above-mentioned application data.

[0010] Furthermore, other objects of this invention are to offer the printing system which can perform non-printed processing actuation and its data-processing approach of the application data concerned in parallel to printing processing of the above-mentioned application data.

[Translation done.]

*** NOTICES ***

JPO and NCIP are not responsible for any damages caused by the use of this translation.

1. This document has been translated by computer. So the translation may not reflect the original precisely.
2. **** shows the word which can not be translated.
3. In the drawings, any words are not translated.

MEANS

[Means for Solving the Problem] In order to attain the above-mentioned object, invention of claim 1 In the printing system which prints the application data by which printing directions were carried out with application by the printer A 1st medium data origination means to create the 1st medium data from said application data, from said 1st medium data -- this -- it is characterized by providing a 2nd medium data origination means to create the 2nd medium data of the same data format as the 1st medium data, and a print-data creation means to create the print data which can be processed by said printer from said 2nd medium data.

[0012] Invention of claim 2 is characterized by constituting said 2nd medium data origination means by merge means to create said 2nd medium data by compounding the machine-readable sign in which machine reading is possible to said 1st medium data in invention of claim 1.

[0013] Invention of claim 3 is characterized by the number of said machine-readable signs being any one at least of each information on the identification information of said application data, a printing day entry, pagination information, providing agency host equipment information, and creation operation system name information in invention of claim 2.

[0014] Invention of claim 4 is characterized by constituting said 2nd medium data origination means by data-conversion means to create said 2nd medium data by changing into the data corresponding to the printing control information to which said 1st medium data is directed along with said printing directions in invention of claim 1.

[0015] Invention of claim 5 is characterized by said printing control information being any one of the control information which directs N-up printing, amplification printing, or cutback printing to said application data in invention of claim 4.

[0016] Invention of claim 6 carries out providing further a movement-directive means direct non-printed processing actuation other than the printing processing to said application data, and the non-printed processing control means which performs the non-printed processing actuation concerned while performing print-data creation processing by said print-data creation means when there are directions of said non-printed processing actuation with said movement directive means as the description in invention of claim 1.

[0017] Invention of claim 7 is characterized by being any one of the processing to which said non-printed processing actuation registers said 2nd medium data into a server, the processing which carries out e-mail transmission of said 2nd medium data, and the processing actuation to which facsimile transmission of said 2nd medium data is carried out at least in invention of claim 6.

[0018] while invention of claim 8 creates the 1st medium data from said application data in the data-processing approach of the printing system which prints the application data by which printing directions were carried out with application by the printer -- from said 1st medium data -- this -- after creating the 2nd medium data of the same data format as the 1st medium data, it is characterized by to create the print data which can be processed by said printer from said 2nd medium data.

[0019] Invention of claim 9 is characterized by creating said 2nd medium data by compounding the machine-readable sign in which machine reading is possible to said 1st medium data in invention of claim 8.

[0020] Invention of claim 10 is characterized by the number of said machine-readable signs being any one at least of each information on the identification information of said application data, a

printing day entry, pagination information, providing agency host equipment information, and creation operation system name information in invention of claim 9.

[0021] Invention of claim 11 is characterized by creating said 2nd medium data by changing into the data corresponding to the printing control information to which said 1st medium data is directed along with said printing directions in invention of claim 8.

[0022] Invention of claim 12 is characterized by said printing control information being any one of the control information which directs N-up printing, amplification printing, or cutback printing to said application data in invention of claim 11.

[0023] In invention of claim 8, invention of claim 13 is characterized by performing the non-printed processing actuation concerned, performing creation processing of said print data, when non-printed processing actuation other than the printing processing to said application data is directed selectively and there are directions of this non-printed processing actuation.

[0024] Invention of claim 14 is characterized by being any one of the processing to which said non-printed processing actuation registers said 2nd medium data into a server, the processing which carries out e-mail transmission of said 2nd medium data, and the processing actuation to which facsimile transmission of said 2nd medium data is carried out at least in invention of claim 13.

[0025]

[Embodiment of the Invention] Hereafter, the gestalt of 1 operation of this invention is explained to a detail with reference to an accompanying drawing. Drawing 1 is the block diagram showing the outline configuration of the printing system concerning the gestalt of 1 operation of this invention. This printing system With the application 10 and application 10 which have data editing and a print facility at least The code data of the electronic file by which printing directions were carried out The machine-readable sign which embeds by (the content of the electronic file) and is printed The printing conditions inputted from the user input section 20 which inputs printing conditions, such as coded data-ed for obtaining and a printing parameter (printer control information) of this electronic file, and the user input section 20 are followed. The print data in which printing processing is possible by the printer 50 from the above-mentioned code data By actuation control of the virtual printer driver 30 to generate, the printer driver 40 which drives a printer 50 based on the print data outputted from this virtual printer driver 30, and this printer driver 40 The printer 50 which carries out the printed output of the above-mentioned print data is provided, and it is constituted.

[0026] The virtual printer driver 30 prepared between application 10 and a printer driver 40 here The above-mentioned printing conditions of being inputted from the 1st medium data generation section 302 which generates the 1st medium data from the above-mentioned code data inputted from application 10, and the user input section 20 are followed. The 2nd medium data of the same data format as the 1st medium data concerned from the above-mentioned 1st medium data The print data which a printer 50 can printing process are generated from the 2nd medium data stored in the data storage section 304 which stores the 2nd medium data generation section 303, the 1st medium data, and the 2nd medium data to generate, and the data storage section 304. The control section 301 which controls in generalization the print-data generation section 305 sent out to a printer driver 40, the above-mentioned 1st medium data generation section 302, the 2nd medium data generation section 303, the data storage section 304, and the print-data generation section 305 is provided, and it is constituted.

[0027] Next, in this printing system, the outline actuation in the case of printing the electronic file by which printing directions were carried out from application 10 is explained with reference to the flow chart shown in drawing 2 .

[0028] In this printing system, when it is going to print the electronic file of the arbitration generated by the application 10 concerned from application 10, a user publishes the printing directions to that electronic file that it is going to print (step 201). By publishing these printing directions, in the user input section 20, a print dialog as shown, for example in drawing 3 is displayed, and it shifts to the processing which receives setting out of the printing conditions of an electronic file that the above-mentioned printing directions were made (step 202). there be the size of a form besides the coded data-ed for obtain the machine-readable sign embed to the data

of an electronic file with which the printing directions as requirements for a printing condition which can be input be made from the user input section 20 using the above-mentioned print dialog to the printing directions from application 10 (data to encode) and the sense, the propriety of N-up printing or amplification/cutback printing, and various information on margin information so that the example of drawing 3 may also show.

[0029] Completion of setting-out actuation of the printing conditions by this print dialog inputs into the virtual printer driver 30 a printing parameter, coded data-ed, etc. to which the code data of an electronic file with which the above-mentioned printing directions were made were set by the user from the above-mentioned user input section 20 again from the above-mentioned application 10, respectively.

[0030] In the virtual printer driver 30, first, by the 1st medium data generation section 302, the 1st medium data are generated from the above-mentioned code data sent from application 10 (step 211), and it stores in the data storage section 304. The 1st medium data have the format which can reproduce the GDI (Graphic Device Independent) command in step 213 mentioned later (rendering). As an example of this 1st medium data, various meta files, such as WMF (Windows Meta File) and EMF (Enhanced Meta File), are raised (Windows is the trademark of U.S. Microsoft). In addition, about the 1st medium data, if the requirements that the GDI command is reproducible are satisfied, even if it is the format for which it opted uniquely, it will not interfere.

[0031] On the other hand, the above-mentioned printing condition information which the user set up is inputted into the 2nd medium data generation section 303 from the user input section 20. The 2nd medium data generation section 303 generates the 2nd medium data according to the above-mentioned printing conditions from the 1st medium data stored in the data storage section 304 (step 212), and stores them in the data storage section 304.

[0032] One of the processings of this step 212 has the processing which embeds this machine-readable sign to the 1st medium data after encoding the coded data-ed inputted from the user input section 20 as a machine-readable sign, and generates these 1st medium data and isomorphism-type data (the 2nd medium data). Moreover, there is processing which carries out data conversion of the 1st medium data to the 1st medium data concerned and the data (the 2nd medium data) of business, such as N-up printing of an isomorphism type and amplification/cutback printing, as other one based on the printing parameters (N-up printing, amplification/cutback printing, etc.) inputted from the user input section 20.

[0033] Next, the print-data generation section 305 reproduces GDI series of commands from the data stored in the 2nd medium data in the data storage section 304, and sends it out to a printer driver 40 with those printing directions by using this GDI series of commands as print data (step 213). When it consists of WMF(s) and EMF(s) which the 2nd medium data mentioned above about this processing, it can print by Windows API.

[0034] A printer driver 40 starts a printer 50 with the printing directions sent from the print-data generation section 305, and outputs the above-mentioned print data (GDI series of commands) to a printer 50 (step 221). Furthermore, a printer 50 carries out the printed output of the above-mentioned print data.

[0035] Thus, the printing system of this invention arranges the virtual printer driver 30 (application realizes) between application 10 and a printer driver 40 (on an interface), first generates the medium data which can reproduce the GDI code in this virtual printer driver 30 from the application data by which printing directions were carried out from application 10, by reproducing the GDI code based on this medium data further, generates print data and gives them to a printer driver 40. That is, in the printing system of this invention, the virtual printer driver 30 will hit application, if it sees from an application side and will see from a printer driver 40 side in a printer driver. By making such a virtual printer driver 30 intervene, the printer output of various gestalten, such as embedding printing of a machine reading sign, N-up printing, or amplification/cutback printing, is realizable from all the applications 10 equipped with the print facility to any printers 50.

[0036] Next, the example of the printing processing actuation in this printing system is explained in full detail with reference to the flow chart shown in drawing 4 . Drawing 5 is outline block diagram **** of this printing system used in order to explain the printing processing which met the flow chart shown in this drawing 4 . In addition, especially the flow chart shown in this drawing 4

corresponds to the printing processing in the case of embedding and printing a machine-readable sign from a user to the electronic file by which printing directions were carried out. In this case, as the 2nd medium data generation section 303 in the virtual printer driver 30, as shown in drawing 6, the thing (it expresses with sign 303A) possessing the code data analysis section 3031, the embedding data generation section 3032, and the merge-application section 3033 is used.

[0037] As shown in drawing 5, the virtual printer driver 30 exists between the printer drivers 40 by which this printing system controls application 10 and a printer 50, and, the virtual printer driver 30, application 10, and in between, OS (operating system) intervenes further. Application 10 has the function which displays a printing dialog as shown at the time of printing of the electronic file generated by the application 10 concerned, for example, this drawing upper part. In the printing dialog of this application 10, the print dialog of the user input section 20 opens by choosing a property. It seems that this print dialog is shown in drawing 3. A user inputs a printing parameter, data (coded data-ed) which it is going to encode of the electronic file which it is going to print from the above-mentioned application 10 using this print dialog.

[0038] In the above-mentioned application 10, while editing a certain electronic file (step 401), the virtual printer driver 30 and printer driver 40 which intervene between this application 10 and printer 50 are in an idle state, respectively. At this time, OS which controls activation of the above-mentioned application 10 is supervising whether a certain event was directed from the above-mentioned application 10 (step 411).

[0039] In this condition, if there are printing directions from the above-mentioned application 10 to the electronic file under above-mentioned edit (step 402), in OS, an event occurs, and it recognizes that that event is printing directions (step 411 YES), and motive directions are sent out to the virtual printer driver 30 (step 412). Thereby, it will be in activation status, and first, the virtual printer driver 30 processes initialization (step 421), subsequently to a printer driver 40 sends out starting directions (step 422), and waits for the advice of the completion of initialization from a printer driver 40 after that (step 423).

[0040] On the other hand, a printer driver 40 returns advice of the completion of initialization to the virtual printer driver 30, after processing initialization with the starting directions from the virtual printer driver 30 (step 431). The virtual printer driver 30 will notify the completion of initialization to OS, if the above-mentioned advice of the completion of initialization is received (step 423 YES).

[0041] If it is, on the other hand, supervising whether there is any advice of the completion of initialization from this virtual printer driver 30 by OS after starting command sending out to the above-mentioned virtual printer driver 30, and advice of the completion of initialization is received from the virtual printer driver 30 in this condition (step 413 YES), advice of a printing preparation completion is sent out to application 10 by recognition that preparation of the virtual printer driver 30 concerned completed (step 414).

[0042] Moreover, in application 10, after emitting printing directions in step 402, it is supervising whether processing of OS was completed, and judges that processing of (step 403YES) and OS was completed by receiving advice of a printing preparation completion from OS, and code data are outputted to the OS (step 404).

[0043] In OS which received this code data, predetermined code processing service is carried out (step 415), and the code data after this service processing are sent out to the virtual printer driver 30.

[0044] As processing of the above-mentioned step 404 -> step 415 mentioned above, a print dialog (the user input section 20) as shown in drawing 3 based on the printing directions from application 10 displays, and it corresponds to the processing which inputs by the user using the above-mentioned print dialog in the printing parameter to the code (encoded code) and the above-mentioned code data which it is going to encode to the content of a text file for [which is inputted from application 10 by the above-mentioned printing directions] printing (code data). The encoded code and printing parameter which are inputted using the code data inputted from these applications 10 or the above-mentioned print dialog are outputted to the virtual printer driver 30 through the above-mentioned code processing service.

[0045] In the virtual printer driver 30, if the code data outputted by processing of the above-

mentioned step 415 in OS are received (step 424), first, by the 1st medium data generation section 302, the 1st medium data which change by format reproducible in the GDI code in subsequent processing are created based on the received code data (step 425), and it stores in the data storage section 304.

[0046] Moreover, in 2nd medium data generation section 303A (refer to drawing 6) of the virtual printer driver 30, while the above-mentioned code data received from OS are analyzed in the code data-analysis section 3031 and this analysis result is sent out to the merge-application section 3033, the machine-readable sign which should be embedded to the code data by which printing directions were carried out [above-mentioned] based on the coded data-ed inputted from the user input section 20 in the embedding data generation section 3032 is generated (step 426), and it sends out to the merge-application section 3033.

[0047] Furthermore, after the merge-application section 3033 reads the 1st medium data from the data storage section 304, by merging into the above-mentioned 1st medium data the machine-readable sign generated at the above-mentioned step 426 according to the printing parameter into which it is inputted from the analysis result and the user input section 20 in the code data analysis section 3031, it generates the 2nd medium data (step 427), and stores them in the data storage section 304. Here, the 2nd medium data consist of the same formats as the above-mentioned 1st medium data.

[0048] Then, in the virtual printer driver 30, for reproducing GDI series of commands from the above-mentioned 2nd medium data, print data are generated and these print data are sent out to a printer driver 40 with printing directions by the print-data generation section 305 (step 428).

[0049] If printing directions and print data (GDI series of commands) are received from the virtual printer driver 30 (step 432), a printer driver 40 will start a printer 50 and will output the print data concerned (step 434). Furthermore, a printer 50 carries out the printed output of the print data received from the printer driver 40.

[0050] A printer driver 40 notifies the completion of printing to the virtual printer driver 30 after sending out of the print data to a printer 50. If the above-mentioned advice of the completion of printing is received from a printer driver 40, the virtual printer driver 30 will recognize it as what the processing by the printer driver 40 completed, and will notify the completion of printing to OS (step 429).

[0051] Moreover, it is supervising whether processing of the virtual printer driver 30 completed OS after the above-mentioned code processing service activation, and judges that processing of (step 416) and the virtual printer driver 30 was completed by receiving the above-mentioned advice of the completion of printing from the virtual printer driver 30 during this monitor, and actuation is ended (step 417). Moreover, in that case, to application 10, it notifies that OS processing was completed, and returns to the above-mentioned event monitor loop formation henceforth. On the other hand, in application 10, it supervises whether OS processing was completed after the output of the above-mentioned code data, and (step 405) and a series of printing processings are ended by receiving the above-mentioned advice of the completion of OS processing from OS.

[0052] The virtual printer driver 30 is processing the following (a) - (c) in steps 424-428 so that explanation of processing of a up Norikazu ream may also show.

[0053] (a) The GDI code generates the refreshable 1st medium data from the electronic file which had printing directions from application 10.

[0054] (b) Generate the 2nd medium data of the same format as the 1st medium data concerned by merging this machine-readable sign into the above-mentioned 1st medium data after generating a machine-readable sign from the coded data-ed inputted with the above-mentioned printing directions.

[0055] (c) By reproducing the GDI code train from the 2nd medium data, generate print data and carry out printing directions at a printer driver 40.

[0056] This (a) Since the machine-readable sign set up by the user from the user input section 20 is merged into the print data after processing of - (c), the printed output which the above-mentioned machine-readable sign embedded and was printed by the above-mentioned application data can be obtained by carrying out the printed output of these print data by the printer 50 through a printer driver 40.

[0057] As an example, drawing 7 shows the printing image in the case of embedding and printing a machine-readable sign (this drawing continuous tone part) from each application (10) of a word processor, a spreadsheet, and a drawing tool to each electronic file.

[0058] In the printing processing in this case, first, if a user performs printing of an electronic file with each above-mentioned application 10, a print dialog as shown in drawing 3 will be displayed. Here, data (coded data-ed) to encode as a machine-readable sign are inputted. Especially, on the dialog in drawing 3, the example which encodes a "integer" as data type and encodes "1234567890" as a value is shown. If the "O.K." carbon button on a dialog is pushed after inputting coded data-ed Coding of the above-mentioned coded data-ed is performed within the virtual printer driver 30. After this coded data was merged into the 1st medium data and the 2nd medium data were generated, Furthermore, this 2nd medium data turns into print data reproduced by the GDI code train, a printer driver 40 is passed, and the printed output which coded data as shown in drawing 7 by the printer 50 embeds and by which it was printed can be obtained.

[0059] Thus, to the electronic file in it, if it is the application 10 which is equipped with a print facility according to the configuration of this invention which has the virtual printer driver 30 which is arranged between application 10 and a printer driver 40, and performs embedding of a machine-readable sign on refreshable medium data by the GDI code train, also when what kind of printer 50 is used, embedding printing of a machine-readable sign can be performed from all applications, such as a word processor as shown in drawing 7, a spreadsheet, and a drawing tool.

[0060] In addition, a bar code, data glyph, etc. can be used as a machine-readable sign embedded and printed by this printing system. Moreover, as a content of this machine-readable sign, the registration ID at the time of registering the electronic file for printing into a server can be considered so that it may mention later. In this case, on the output form which embedded and printed the machine-readable sign, the above-mentioned machine-readable sign is read with a scanner, and it scans, and Registration ID is recognized and employment of searching the electronic file corresponding to the registration ID concerned from the above-mentioned server is attained from that reading result.

[0061] As other examples of a machine-readable sign, various information, such as printing time of the identifier of the printed electronic file, the supplying agency host device name of this electronic file, OS name that created this electronic file or a user name, and this electronic file, and pagination, can be considered. Furthermore, it is applicable also to the application of spacing and printing alphabetic characters, such as "important" and a "top secret", to the electronic file printed on the output form (Watermark) etc.

[0062] Moreover, although he is trying to send out to a printer driver 40 in this example after merging a machine-readable sign into the 1st medium data beforehand and generating the 2nd medium data, you may make it send out a machine-readable sign as GDI series of commands instead of this processing in the processing which sends printing directions to a printer driver 40.

[0063] By the way, it is the processing which embedding printing processing of the above-mentioned machine-readable sign does not perform data conversion of the application data itself, but adds and prints additional information, such as the server registration ID, to this application data. In addition, the printing system of this invention can also be considered as the configuration which carries out data conversion of the application data itself, and carries out a printout. As an example of the printing processing accompanied by such data conversion, N-up printing, amplification, or cutback printing can be considered. Moreover, processing of generating a certain file which has an available format by the virtual printer driver 30 is also equivalent to this. What is necessary is just to use the thing (for it to express with sign 303B) possessing the code data analysis section 3031 and the data-conversion section 3034 as the 2nd medium data generation section 303 in the virtual printer driver 30, as shown in drawing 8 in order to add such a printing processing facility.

[0064] It explains briefly [below] about the printing processing in the printing system which adopts 2nd medium data generation section 303B, and changes in the virtual printer driver 30. In addition, printing processing by the printing system in this case is realizable by permuting by processing which describes processing of step 424 by the virtual printer driver 30 to the step 427 below among the processings which met the flow chart shown in drawing 4 in the printing system

which embeds and prints additional information, such as a machine-readable sign.

[0065] Now, in the printing system using 2nd medium data generation section 303B as shown in drawing 8 , after printing directions were made from application 10, N-up printing should be directed on the print dialog (refer to drawing 3). Completion of the setting-out actuation by this print dialog inputs into the virtual printer driver 30 the printing parameter with which the code data of the electronic file by which printing directions were carried out at this time direct the above-mentioned N-up printing from the user input section 20 again from application 10, respectively.

[0066] In the virtual printer driver 30, if the code data inputted from application 10 are received, first, by the 1st medium data generation section 302, the 1st medium data which change by format reproducible in the GDI code in subsequent processing are created based on the received code data, and it stores in the data storage section 304.

[0067] Moreover, in 2nd medium data generation section 303B (refer to drawing 8) of the virtual printer driver 30, while the above-mentioned code data received from application 10 are analyzed in the code data analysis section 3031 and this analysis result is sent out to the data-conversion section 3034, the printing parameter inputted from the user input section 20 is incorporated in the data-conversion section 3034 concerned.

[0068] Then, referring to the analysis result in the code data analysis section 3031, after reading the 1st medium data from the data storage section 304, by changing the above-mentioned 1st medium data into the data for N-up printing according to the printing parameter inputted from the user input section 20, the data-conversion section 3034 generates the 2nd medium data, and stores them in the data storage section 304.

[0069] Furthermore, in the virtual printer driver 30, by reproducing GDI series of commands from the above-mentioned 2nd medium data, ***** is generated and these print data are sent out to a printer driver 40 with printing directions by the print-data generation section 305.

[0070] If a printer driver 40 receives printing directions and print data (GDI series of commands) from the virtual printer driver 30, a printer 50 will be started, the print data concerned will be outputted, and a printer 50 will carry out the printed output of the print data received from the printer driver 40 further.

[0071] Drawing 8 shows the example of a printed output based on the above-mentioned printing processing. In this example, when the electronic file of each [these] ** page is usually printed by each output form (two sheets), respectively when 1-up printing is directed for example, to the electronic file which consists of 2 pages, and 2-up printing is directed to the above-mentioned electronic file, the electronic file for above-mentioned 2 pages is printed by the output form of one sheet.

[0072] When using by others, cutback / amplification printing or the virtual printer driver 30 and obtaining a certain data of a sake, even if it faces, it can be coped with by same processing.

[printing / this / N-up]

[0073] In addition, although the example described previously described what carries out independently processing which adds and prints additional information to the application data by which printing directions were carried out, and processing which changes this application data into the data for N-up printing, or a cutback or amplification printing, the system configuration which used these processings together is also possible.

[0074] Next, the gestalt of other operations of this invention is explained. Drawing 10 is the block diagram showing the outline configuration of the printing system concerning the gestalt of other operations of this invention, and gives the same sign to the part which achieves the same function as each part of the printing system shown in drawing 1 .

[0075] In this printing system, the non-printed processing control section 306 which controls processings other than this printing processing is formed in virtual printer driver 30A at the time of printing of an application data by which printing directions were carried out from application 10. This non-printed processing control section 306 is connected with external devices, such as a server 60, through the predetermined interface. Outline actuation of this printing system is explained with reference to the flow chart shown in drawing 11 R> 1. In addition, also in the flow chart shown in this drawing 11 , the same sign is attached about processing by the system shown in drawing 1 , and the same processing.

[0076] In this printing system, when it is going to print the electronic file of arbitration from application 10, a user publishes the printing directions to that electronic file that it is going to print (step 201). By publishing these printing directions, in the user input section 20, a print dialog as shown, for example in drawing 3 is displayed, and it shifts to the processing which receives setting out of the printing conditions relevant to the electronic file by which the above-mentioned printing directions were made (step 202).

[0077] Moreover, in this printing system, starting directions of non-printed processings other than the printing processing to the electronic file which carried out [above-mentioned] printing directions by the predetermined input function are published, using a dialog (not shown) other than the above-mentioned print dialog (step 203).

[0078] Completion of the above-mentioned printing conditioning actuation and the above-mentioned non-printed processing starting directions actuation inputs into the virtual printer driver 30 printing parameters and coded data-ed, such as N-up printing to which the code data of an electronic file with which the above-mentioned printing directions were made were set by the user from the above-mentioned user input section 20 again, from the above-mentioned application 10, respectively. At this time, the above-mentioned non-printed processing starting directions information is also included in the information inputted from the user input section 20.

[0079] In virtual printer driver 30A, in the 1st medium data generation section 302, the 1st medium data are first generated from the above-mentioned code data sent from application 10 (step 211), and it stores in the data storage section 304. On the other hand, the above-mentioned printing condition information which the user set up is inputted into the 2nd medium data generation section 303 from the user input section 20. The 2nd medium data generation section 303 generates the 2nd medium data according to the above-mentioned printing conditions from the 1st medium data generation section 303 stored in the data storage section 304 (step 212), and stores them in the data storage section 304.

[0080] Next, the print-data generation section 305 reproduces GDI series of commands from the data stored in the 2nd medium data in the data storage section 304, and sends it out to a printer driver 40 with those printing directions by using this GDI series of commands as print data (step 213).

[0081] A printer driver 40 starts a printer 50 with the printing directions sent from the print-data generation section 305, and outputs the print data (GDI series of commands) sent with the printing directions concerned to a printer 50 (step 221). Furthermore, a printer 50 carries out the printed output of the print data.

[0082] Moreover, after sending out of the printing directions in step 213, by the control section 301 of virtual printer driver 30A, when it confirms whether starting directions of non-printed processing are inputted from the user input section 20 (step 214) and the starting directions concerned are not inputted (step 214 NO), processing is ended. On the other hand, when starting directions of non-printed processing are inputted (step 214 YES), the non-printed processing control section 306 is started, and non-printed processing by which the starting directions concerned are made is performed (step 215).

[0083] In the printing system shown in drawing 10, in registering the data concerned into a server 60 with printing processing of an application data, in the above-mentioned step 203, it inputs the directions information which means "server registration" as non-printed processing starting directions. At this time, by the control section 301 of virtual printer driver 30A, it recognizes that the starting directions of "the server registration" are carried out based on the directions information concerned in the above-mentioned step 214, and server registration starting is notified to the non-printed processing processing control section 306. By receiving the above-mentioned advice, the non-printed processing control section 306 reads the 2nd medium data stored in the data storage section 304, adds the registration ID specified for example, using the above-mentioned print dialog in the 2nd medium data concerned, and registers it into a server 60.

[0084] In addition, if a mail server and facsimile apparatus are connected as an external device and the control function of these external devices is added to the non-printed processing control section 306, printing the electronic file which corresponds with the printing directions from application 10, e-mail transmission of the electronic file concerned can be carried out through a

mail server, or the electronic file concerned is transmitted to facsimile apparatus, and it can respond to various processings of carrying out facsimile transmission at a phase hand.
[0085]

[Translation done.]

*** NOTICES ***

JPO and NCIP are not responsible for any damages caused by the use of this translation.

- 1.This document has been translated by computer. So the translation may not reflect the original precisely.**
- 2.**** shows the word which can not be translated.**
- 3.In the drawings, any words are not translated.**

DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] The outline block diagram of the printing system concerning the gestalt of 1 operation of this invention.

[Drawing 2] The flow chart which shows printing processing actuation of the printing system in drawing 1 .

[Drawing 3] Drawing showing an example of the print dialog used for setting out of printing conditions.

[Drawing 4] The flow chart which shows processing actuation of the whole system at the time of sign embedding printing.

[Drawing 5] The outline block diagram of this printing system used in order to explain the processing actuation shown in drawing 4 .

[Drawing 6] Drawing showing the configuration of the 2nd medium data generation section which is adapted for sign embedding printing.

[Drawing 7] Drawing showing the printed output image at the time of sign embedding printing.

[Drawing 8] Drawing showing the configuration of the 2nd medium data generation section which is adapted for the printing processing accompanied by data conversion.

[Drawing 9] Drawing showing the example of a printed output at the time of the printing processing accompanied by data conversion.

[Drawing 10] The outline block diagram of the printing system concerning the gestalt of other operations of this invention.

[Drawing 11] The flow chart which shows printing processing actuation of the printing system in drawing 10 .

[Description of Notations]

10 — Application, 20 — User input section (print dialog), 30 30A — A virtual printer driver, 301 — A control section, 302 — The 1st medium data generation section, 303,303A, 303B — The 2nd medium data generation section, 3031 — Code data analysis section, 3032 [— The data storage section, 305 / — The print-data generation section, 306 / — A non-printed processing control section, 40 / — A printer driver, 50 / — A printer, 60 / — Server] — The embedding data generation section, 3033 — The merge-application section, 3034 — The data-conversion section, 304

[Translation done.]

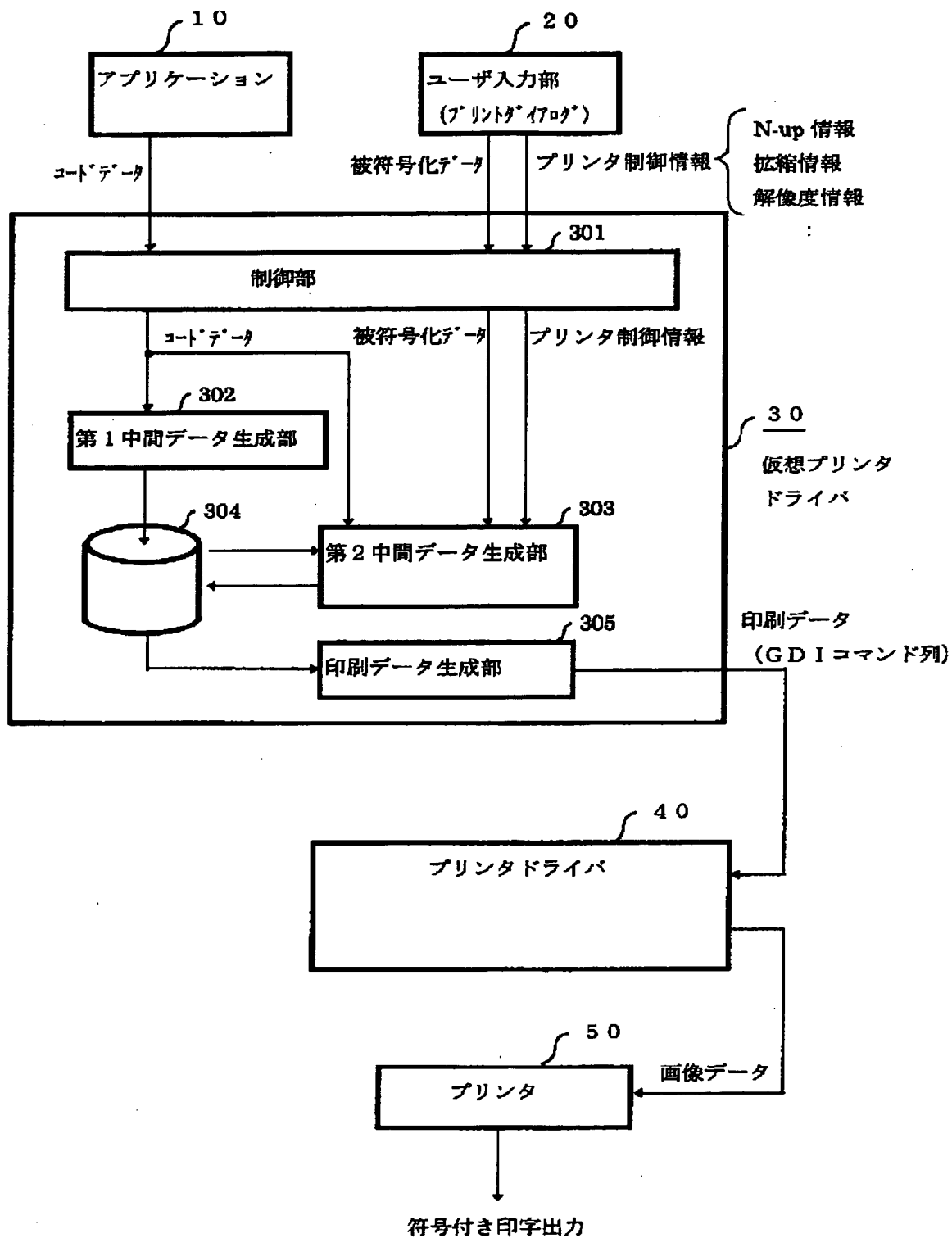
*** NOTICES ***

**JPO and NCIP are not responsible for any
damages caused by the use of this translation.**

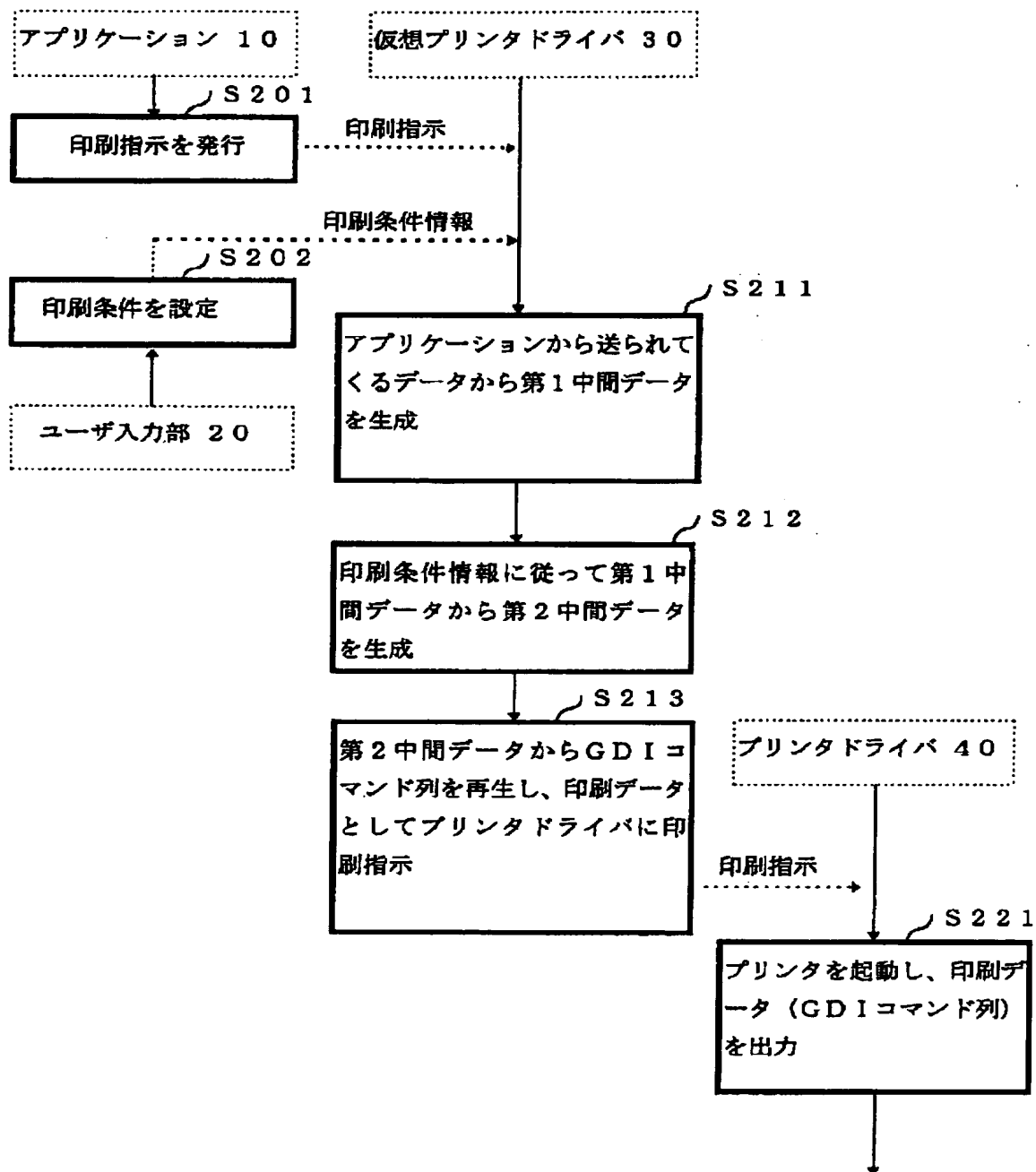
1. This document has been translated by computer. So the translation may not reflect the original precisely.
2. **** shows the word which can not be translated.
3. In the drawings, any words are not translated.

DRAWINGS

[Drawing 1]



[Drawing 2]



[Drawing 3]

プリントダイアログ

用紙サイズ
☒ A4 ☐ B4 ☐ A3

Nアップ
☐ 1アップ ☐ 2アップ ☐ 3アップ

縮小率

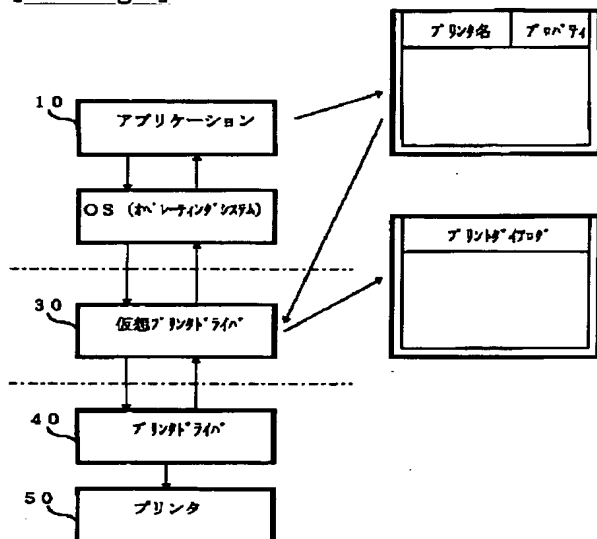
用紙の向き
☒ 縦 ☐ 横

余白
 左 右
 上 下

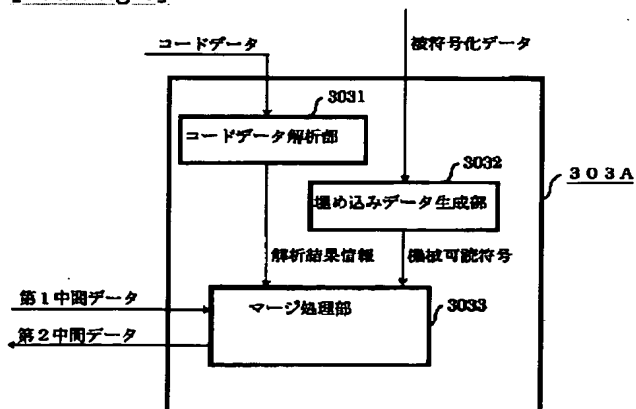
符号化するデータ
 データ型
☐ 文字列
☒ 整数
☐ 実数
☐ URL
 値

OK キャンセル

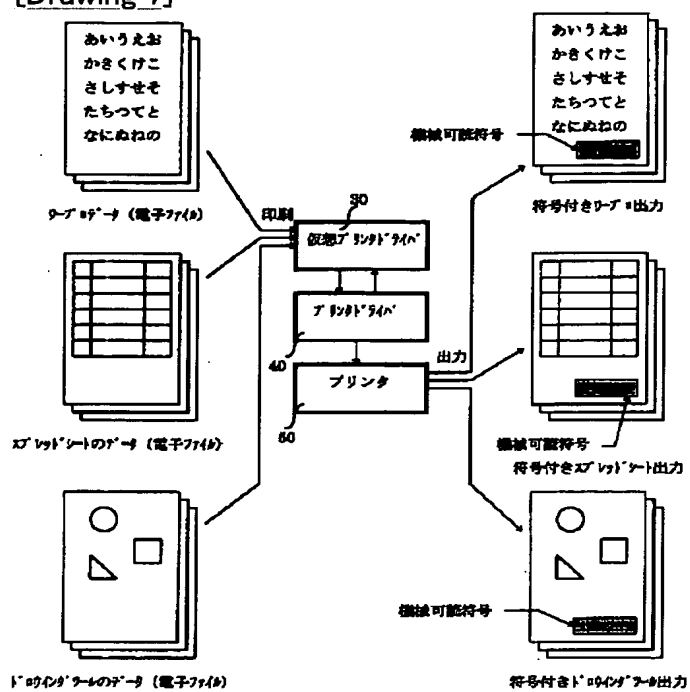
[Drawing 5]



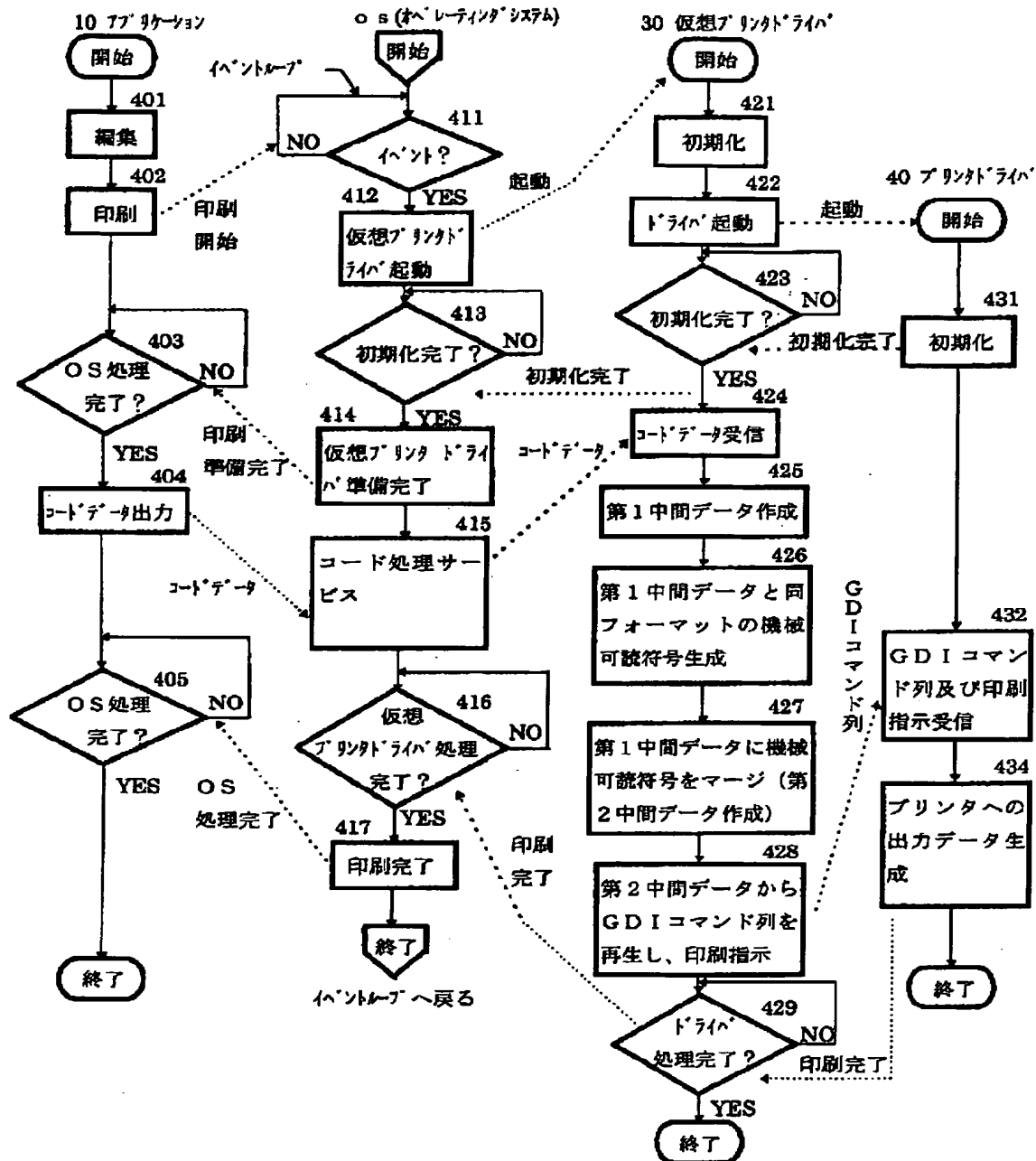
[Drawing 6]



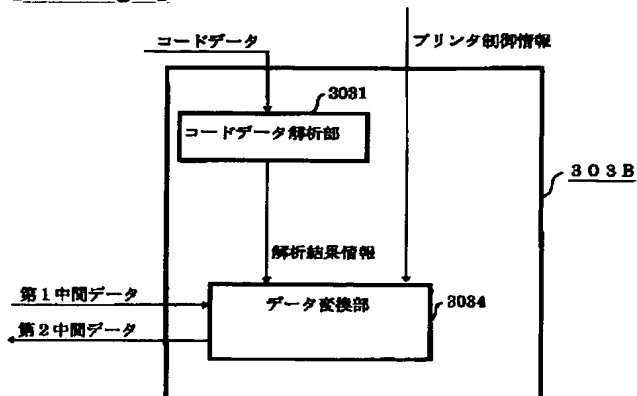
[Drawing 7]



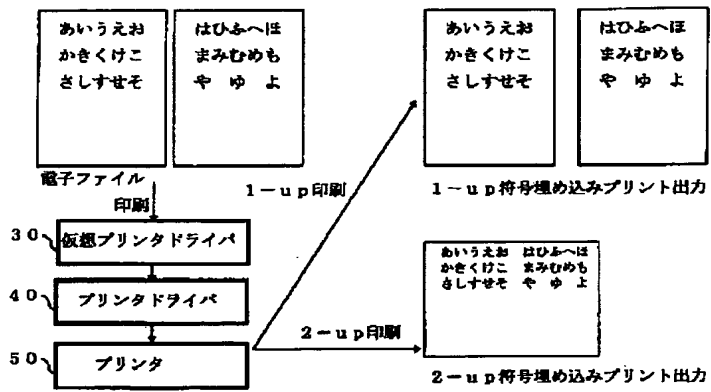
[Drawing 4]



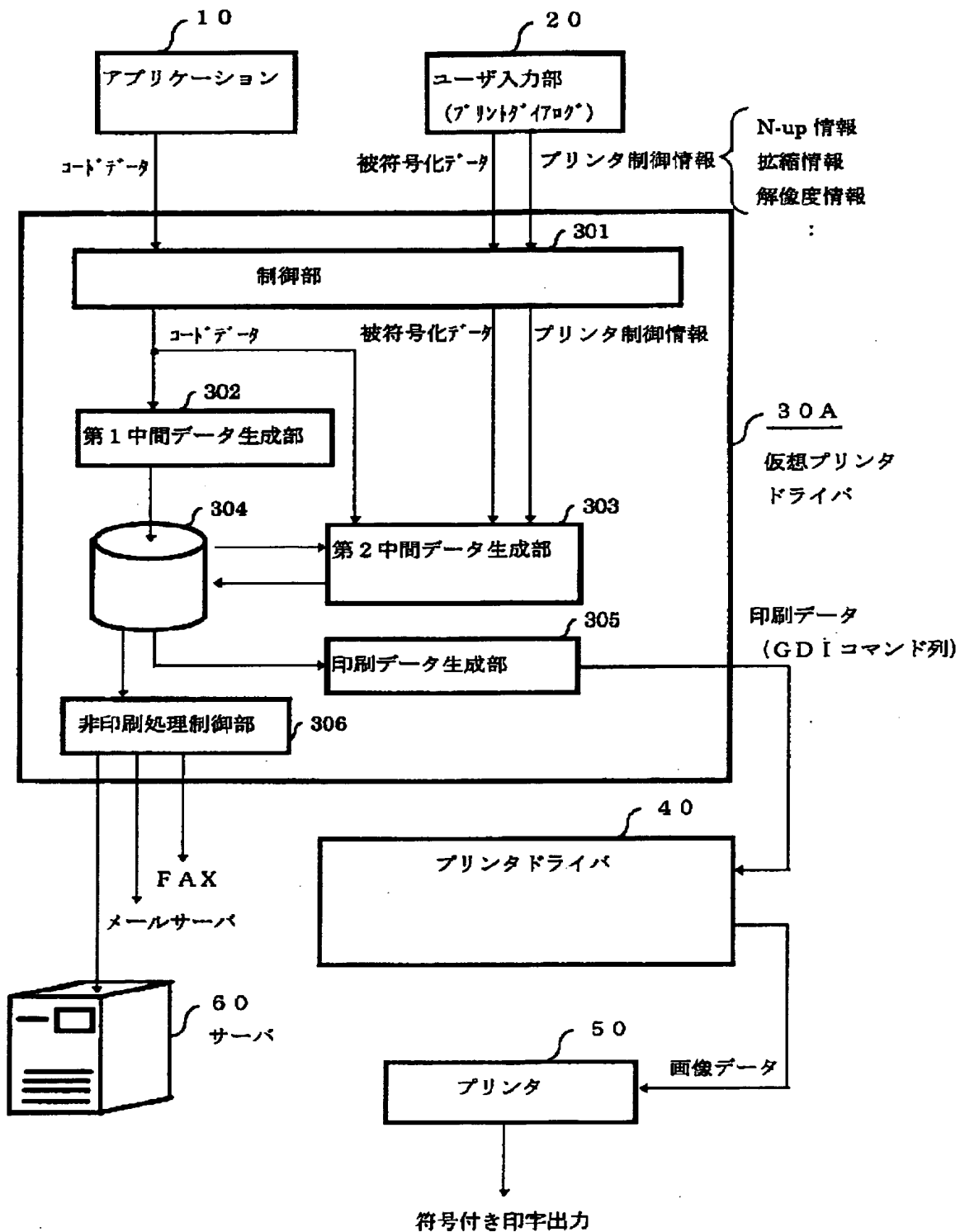
[Drawing 8]



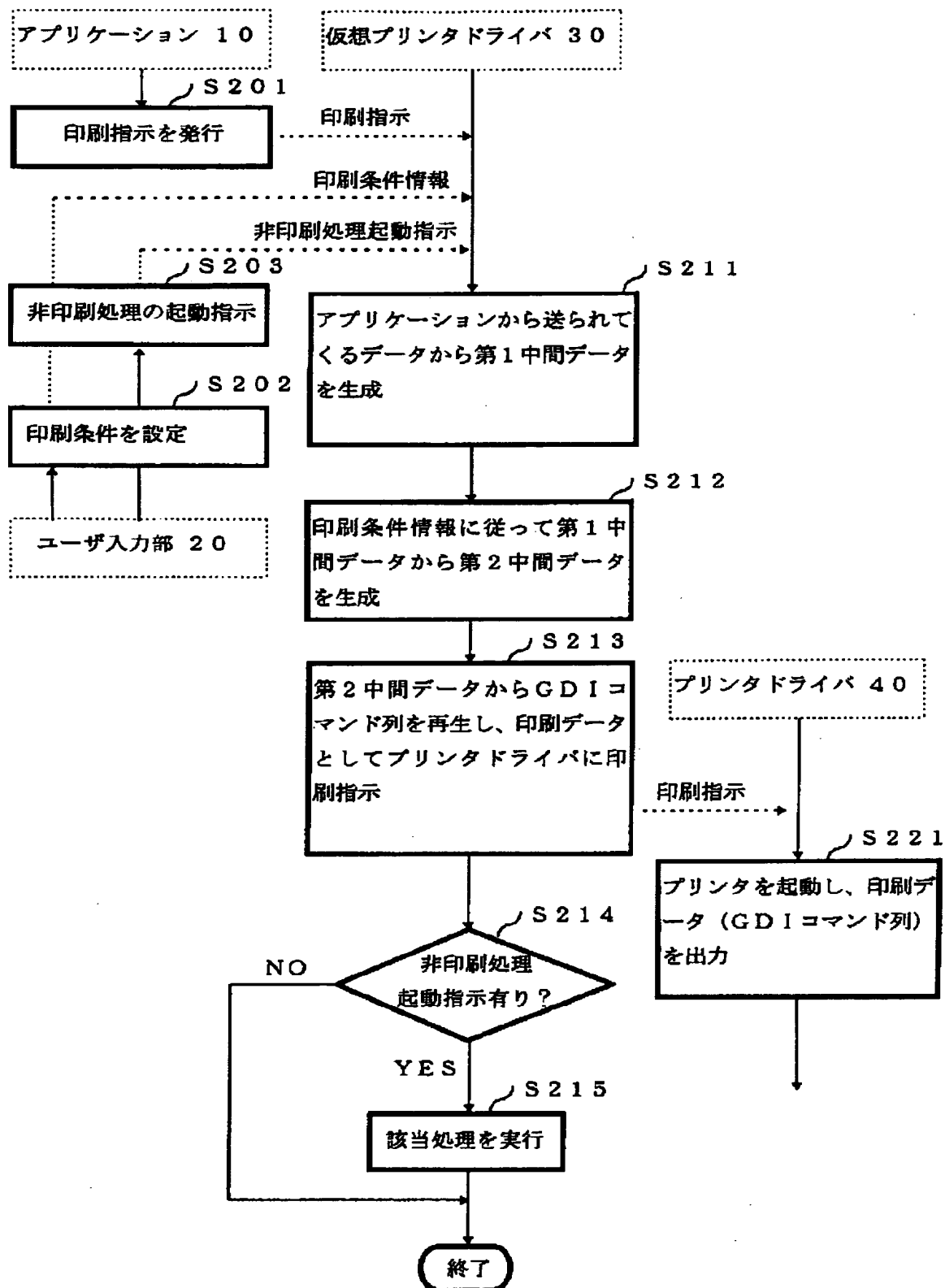
[Drawing 9]



[Drawing 10]



[Drawing 11]



(19)日本国特許庁 (J P)

(12) 公 開 特 許 公 報 (A)

(11)特許出願公開番号

特開平11-184657

(43)公開日 平成11年(1999) 7月 9日

(51)Int.Cl.⁶

識別記号

F I

G 0 6 F 3/12

G 0 6 F 3/12

D

B 4 1 J 21/00

B 4 1 J 21/00

Z

審査請求 未請求 請求項の数14 O L (全 16 頁)

(21)出願番号 特願平9-357522

(22)出願日 平成9年(1997)12月25日

(71)出願人 000005496

富士ゼロックス株式会社

東京都港区赤坂二丁目17番22号

(72)発明者 堀金 隆一

神奈川県川崎市高津区坂戸3丁目2番1号

K S P R & D ビジネスパークビル

富士ゼロックス株式会社内

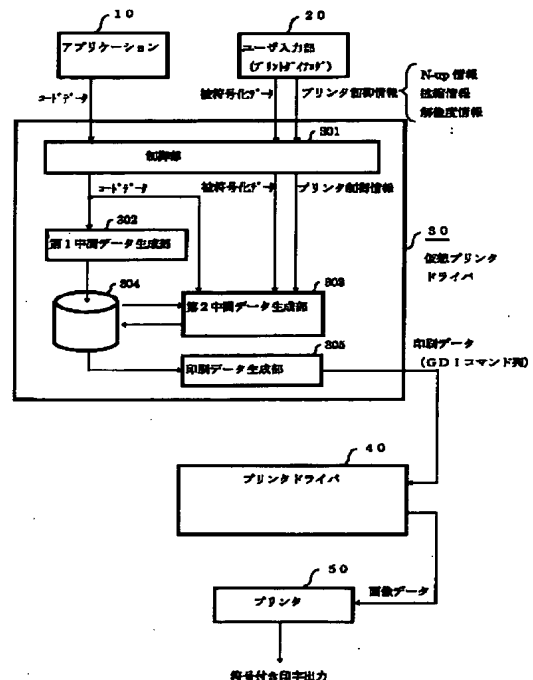
(74)代理人 弁理士 木村 高久

(54)【発明の名称】 印刷システム及びそのデータ処理方法

(57)【要約】

【課題】 様々なアプリケーションのデータをいかなるプリンタからもプリント出力できる印刷システム及びそのデータ処理方法を提供する。

【解決手段】 アプリケーション10とプリンタドライバ40との間に仮想プリンタドライバ30を配置する。仮想プリンタドライバ30において、第1中間データ生成部302は、アプリケーション10より印刷指示されたアプリケーションデータからGDIコードを再現可能な第1中間データを生成し、第2中間データ生成部303は、上記第1中間データに機械可読符号を埋め込むことにより第2中間データを生成する。更に、印刷データ生成部305は、第2中間データからGDIコードを再生することにより印刷データを生成し、プリンタドライバ40に送出する。



【特許請求の範囲】

【請求項 1】 アプリケーションにより印刷指示されたアプリケーションデータをプリンタにより印刷する印刷システムにおいて、

前記アプリケーションデータから第 1 の中間データを作成する第 1 中間データ作成手段と、

前記第 1 の中間データから該第 1 の中間データと同じデータ形式の第 2 の中間データを作成する第 2 中間データ作成手段と、

前記第 2 の中間データから前記プリンタで処理可能な印刷データを作成する印刷データ作成手段とを具備することを特徴とする印刷システム。

【請求項 2】 前記第 2 中間データ作成手段は、前記第 1 の中間データに機械読み取り可能な機械可読符号を合成することにより前記第 2 の中間データを作成するデータ合成手段により構成されることを特徴とする請求項 1 記載の印刷システム。

【請求項 3】 前記機械可読符号は、前記アプリケーションデータの識別情報、印刷日付情報、ページ数情報、提供元ホスト装置情報、作成オペレーションシステム名情報の各情報のうちの少なくともいずれか 1 つであることを特徴とする請求項 2 記載の印刷システム。

【請求項 4】 前記第 2 中間データ作成手段は、前記第 1 の中間データを前記印刷指示に付随して指示される印刷制御情報に対応したデータに変換することにより前記第 2 の中間データを作成するデータ変換手段により構成されることを特徴とする請求項 1 記載の印刷システム。

【請求項 5】 前記印刷制御情報は、前記アプリケーションデータに対する N-u p 印刷または拡大印刷若しくは縮小印刷を指示する制御情報のうちのいずれか 1 つであることを特徴とする請求項 4 記載の印刷システム。

【請求項 6】 前記アプリケーションデータに対する印刷処理以外の非印刷処理動作を指示する動作指示手段と、

前記動作指示手段により前記非印刷処理動作の指示があった場合、前記印刷データ作成手段による印刷データ作成処理を行いながら当該非印刷処理動作を実行する非印刷処理制御手段を更に具備することを特徴とする請求項 1 記載の印刷システム。

【請求項 7】 前記非印刷処理動作は、前記第 2 中間データをサーバに登録する処理、前記第 2 中間データをメール送信する処理、前記第 2 中間データをファクシミリ送信する処理動作のうちの少なくともいずれか 1 つであることを特徴とする請求項 6 記載の印刷システム。

【請求項 8】 アプリケーションにより印刷指示されたアプリケーションデータをプリンタにより印刷する印刷システムのデータ処理方法において、

前記アプリケーションデータから第 1 の中間データを作成するとともに、

前記第 1 の中間データから該第 1 の中間データと同じデ

ータ形式の第 2 の中間データを作成した後、

前記第 2 の中間データから前記プリンタで処理可能な印刷データを作成することを特徴とする印刷システムのデータ処理方法。

【請求項 9】 前記第 2 の中間データは、前記第 1 の中間データに機械読み取り可能な機械可読符号を合成することにより作成することを特徴とする請求項 8 記載の印刷システムのデータ処理方法。

【請求項 10】 前記機械可読符号は、前記アプリケーションデータの識別情報、印刷日付情報、ページ数情報、提供元ホスト装置情報、作成オペレーションシステム名情報の各情報のうちの少なくともいずれか 1 つであることを特徴とする請求項 9 記載の印刷システムのデータ処理方法。

【請求項 11】 前記第 2 の中間データは、前記第 1 の中間データを前記印刷指示に付随して指示される印刷制御情報に対応したデータに変換することにより作成することを特徴とする請求項 8 記載の印刷システムのデータ処理方法。

【請求項 12】 前記印刷制御情報は、前記アプリケーションデータに対する N-u p 印刷または拡大印刷若しくは縮小印刷を指示する制御情報のうちのいずれか 1 つであることを特徴とする請求項 11 記載の印刷システムのデータ処理方法。

【請求項 13】 前記アプリケーションデータに対する印刷処理以外の非印刷処理動作を選択的に指示し、該非印刷処理動作の指示があった場合、前記印刷データの作成処理を行いながら当該非印刷処理動作を実行することを特徴とする請求項 8 記載の印刷システムのデータ処理方法。

【請求項 14】 前記非印刷処理動作は、前記第 2 中間データをサーバに登録する処理、前記第 2 中間データをメール送信する処理、前記第 2 中間データをファクシミリ送信する処理動作のうちの少なくともいずれか 1 つであることを特徴とする請求項 13 記載の印刷システムのデータ処理方法。

【発明の詳細な説明】

【0001】

【発明の属する技術分野】本発明は、アプリケーションにより印刷指示されたデータをプリンタにより印刷する印刷システムに係わり、詳しくは、印刷機能を持つ全てのアプリケーションから、いかなるプリンタに対しても上記アプリケーションデータのプリント出力が行えるようにするためのデータ処理方法の改良に関する。

【0002】

【従来の技術】アプリケーションにより作成、編集した電子ファイルを印刷する際、当該電子ファイルと共に機械読み取り可能な符号（機械可読符号）も一緒に埋め込み印刷するシステムが知られている。この種のシステムにおいて、上記機械可読符号として、例えば電子ファイ

ルの識別情報を用いるものがある。この場合、アプリケーションから印刷指示された文書ファイルを上記機械可読符号を埋め込んで印刷出力した後、この出力用紙を符号読み取り装置（スキャナ）で読み取り走査することにより上記機械可読符号を認識し、該機械可読符号に対応付けて電子ファイルを管理する等の運用が可能となる。

【0003】こうした印刷ファイルの管理を目的とする符号付加印刷機能を有する従来のシステムの一例として、特開平8-50598号公報に記載の電子書類検索システムが知られている。このシステムは、電子書類をプリントアウトする際、当該電子書類に対する付加情報を用紙に出力し、同時に、データベースへ電子書類を格納するシステムであり、特に、用紙に出力する付加情報としてはバーコードを用いられ、このバーコードを読み取ることで電子書類を検索可能としている。

【0004】

【発明が解決しようとする課題】上記電子書類検索システム（特開平8-50598号公報）に代表されるこの種の従来システムでは、通常、あるプリンタを用いて電子ファイルに対する機械可読符号のプリント出力を行うためには、このプリンタを駆動し得るプリンタドライバと、当該プリンタドライバに適合するアプリケーションが用意されることは言うまでもない。

【0005】このことは、この種の従来システムにおいては、あるアプリケーションで作成した電子ファイルをいかなるプリンタによっても印刷できるような配慮がなされていなかったことを意味する。

【0006】これにより、従来システムでは、用いるアプリケーションによって使用プリンタが規制され、使用プリンタによって用いるアプリケーションが規制される結果、例えば電子ファイルに機械可読符号を埋め込んで印刷した後、その機械可読符号を読み取って当該電子ファイルの検索を行うようなシステムの構築が著しく制限されるという問題点があった。

【0007】そこで、本発明の目的は、印刷機能を有する全てのアプリケーションからいかなるプリンタに対してもアプリケーションデータのプリント出力を行うことができる印刷システム及びそのデータ処理方法を提供することにある。

【0008】また、本発明の別の目的は、アプリケーションデータに機械可読符号を埋め込んでプリントする場合においても、このアプリケーションからプリンタを選ばずに上記プリント出力が行える印刷システム及びそのデータ処理方法を提供することにある。

【0009】また、本発明の別の目的は、上記アプリケーションデータに対してN-upプリント等を行う場合においても、このアプリケーションからプリンタを選ばずに上記プリント出力が行える印刷システム及びそのデータ処理方法を提供することにある。

【0010】更に、本発明の他の目的は、上記アプリケ

ーションデータの印刷処理と並行して当該アプリケーションデータの非印刷処理動作を実行可能な印刷システム及びそのデータ処理方法を提供することにある。

【0011】

【課題を解決するための手段】上記目的を達成するために、請求項1の発明は、アプリケーションにより印刷指示されたアプリケーションデータをプリンタにより印刷する印刷システムにおいて、前記アプリケーションデータから第1の中間データを作成する第1中間データ作成手段と、前記第1の中間データから該第1の中間データと同じデータ形式の第2の中間データを作成する第2中間データ作成手段と、前記第2の中間データから前記プリンタで処理可能な印刷データを作成する印刷データ作成手段とを具備することを特徴とする。

【0012】請求項2の発明は、請求項1の発明において、前記第2中間データ作成手段は、前記第1の中間データに機械読み取り可能な機械可読符号を合成することにより前記第2の中間データを作成するデータ合成手段により構成されることを特徴とする。

【0013】請求項3の発明は、請求項2の発明において、前記機械可読符号は、前記アプリケーションデータの識別情報、印刷日付情報、ページ数情報、提供元ホスト装置情報、作成オペレーションシステム名情報の各情報のうちの少なくともいずれか1つであることを特徴とする。

【0014】請求項4の発明は、請求項1の発明において、前記第2中間データ作成手段は、前記第1の中間データを前記印刷指示に付随して指示される印刷制御情報に対応したデータに変換することにより前記第2の中間データを作成するデータ変換手段により構成されることを特徴とする。

【0015】請求項5の発明は、請求項4の発明において、前記印刷制御情報は、前記アプリケーションデータに対するN-up印刷または拡大印刷若しくは縮小印刷を指示する制御情報のうちのいずれか1つであることを特徴とする。

【0016】請求項6の発明は、請求項1の発明において、前記アプリケーションデータに対する印刷処理以外の非印刷処理動作を指示する動作指示手段と、前記動作指示手段により前記非印刷処理動作の指示があった場合、前記印刷データ作成手段による印刷データ作成処理を行いながら当該非印刷処理動作を実行する非印刷処理制御手段を更に具備することを特徴とする。

【0017】請求項7の発明は、請求項6の発明において、前記非印刷処理動作は、前記第2中間データをサーバに登録する処理、前記第2中間データをメール送信する処理、前記第2中間データをファクシミリ送信する処理動作のうちの少なくともいずれか1つであることを特徴とする。

【0018】請求項8の発明は、アプリケーションによ

り印刷指示されたアプリケーションデータをプリンタにより印刷する印刷システムのデータ処理方法において、前記アプリケーションデータから第1の中間データを作成するとともに、前記第1の中間データから該第1の中間データと同じデータ形式の第2の中間データを作成した後、前記第2の中間データから前記プリンタで処理可能な印刷データを作成することを特徴とする。

【0019】請求項9の発明は、請求項8の発明において、前記第2の中間データは、前記第1の中間データに機械読み取り可能な機械可読符号を合成することにより作成することを特徴とする。

【0020】請求項10の発明は、請求項9の発明において、前記機械可読符号は、前記アプリケーションデータの識別情報、印刷日付情報、ページ数情報、提供元ホスト装置情報、作成オペレーションシステム名情報の各情報のうちの少なくともいずれか1つであることを特徴とする。

【0021】請求項11の発明は、請求項8の発明において、前記第2の中間データは、前記第1の中間データを前記印刷指示に付随して指示される印刷制御情報に対応したデータに変換することにより作成することを特徴とする。

【0022】請求項12の発明は、請求項11の発明において、前記印刷制御情報は、前記アプリケーションデータに対するN-up印刷または拡大印刷若しくは縮小印刷を指示する制御情報のうちのいずれか1つであることを特徴とする。

【0023】請求項13の発明は、請求項8の発明において、前記アプリケーションデータに対する印刷処理以外の非印刷処理動作を選択的に指示し、該非印刷処理動作の指示があった場合、前記印刷データの作成処理を行いながら当該非印刷処理動作を実行することを特徴とする。

【0024】請求項14の発明は、請求項13の発明において、前記非印刷処理動作は、前記第2中間データをサーバに登録する処理、前記第2中間データをメール送信する処理、前記第2中間データをファクシミリ送信する処理動作のうちの少なくともいずれか1つであることを特徴とする。

【0025】

【発明の実施の形態】以下、本発明の一実施の形態を添付図面を参照して詳細に説明する。図1は、本発明の一実施の形態に係わる印刷システムの概略構成を示すブロック図である。この印刷システムは、少なくともデータ編集及び印刷機能を有するアプリケーション10、アプリケーション10により印刷指示された電子ファイルのコードデータ（電子ファイルの内容）に埋め込んで印刷する機械可読符号を得るための被符号化データ及び該電子ファイルの印刷パラメータ（プリンタ制御情報）等の印刷条件を入力するユーザ入力部20、ユーザ入力部2

0から入力される印刷条件に従って上記コードデータからプリンタ50で印刷処理可能な印刷データを生成する仮想プリンタドライバ30、この仮想プリンタドライバ30から出力される印刷データに基づきプリンタ50を駆動するプリンタドライバ40、該プリンタドライバ40の駆動制御により上記印刷データをプリント出力するプリンタ50を具備して構成される。

【0026】ここで、アプリケーション10とプリンタドライバ40間に設けられる仮想プリンタドライバ30は、アプリケーション10から入力される上記コードデータから第1の中間データを生成する第1中間データ生成部302、ユーザ入力部20から入力される上記印刷条件に従って上記第1中間データから当該第1中間データと同じデータ形式の第2中間データを生成する第2中間データ生成部303、第1中間データ及び第2中間データを格納するデータ格納部304、データ格納部304に格納されている第2中間データからプリンタ50が印刷処理可能な印刷データを生成してプリンタドライバ40に送出する印刷データ生成部305、上記第1中間データ生成部302、第2中間データ生成部303、データ格納部304、印刷データ生成部305を統括的に制御する制御部301を具備して構成される。

【0027】次に、この印刷システムにおいて、アプリケーション10から印刷指示された電子ファイルを印刷する場合の概略動作について図2に示すフローチャートを参照して説明する。

【0028】この印刷システムにおいて、アプリケーション10から当該アプリケーション10により生成された任意の電子ファイルを印刷しようとする場合、ユーザがその印刷しようとする電子ファイルに対する印刷指示を発行する（ステップ201）。この印刷指示が発行されることにより、ユーザ入力部20では、例えば図3に示すようなプリントダイアログを表示し、上記印刷指示のなされた電子ファイルの印刷条件の設定を受け付ける処理に移行する（ステップ202）。図3の例からも分かるように、アプリケーション10からの印刷指示に対してユーザ入力部20から上記プリントダイアログを用いて入力可能な印刷条件要件としては、印刷指示のなされた電子ファイルのデータに埋め込む機械可読符号を得るための被符号化データ（符号化するデータ）の他、用紙のサイズ及び向き、N-up印刷や拡大／縮小印刷の可否、マージン情報の各種情報がある。

【0029】このプリントダイアログによる印刷条件の設定操作が完了すると、上記アプリケーション10からは上記印刷指示のなされた電子ファイルのコードデータが、また上記ユーザ入力部20からはユーザにより設定された印刷パラメータや被符号化データ等がそれぞれ仮想プリンタドライバ30に入力される。

【0030】仮想プリンタドライバ30では、まず、第1中間データ生成部302により、アプリケーション1

0から送られてくる上記コードデータから第1中間データを生成し(ステップ211)、データ格納部304に格納する。第1中間データは、後述するステップ213においてGDI(Graphic Device Independent)コマンドを再生(再現)できるフォーマットを有するものである。この第1中間データの例としては、WMF(Window Meta File)やEMF(Enhanced Meta File)等の各種メタファイルがあげられる(Windowsは、米Microsoft社の登録商標)。この他、第1中間データについては、GDIコマンドを再生できるという要件を満たすものであれば、独自に決定したフォーマットであっても差し支えない。

【0031】一方、ユーザが設定した上記印刷条件情報は、ユーザ入力部20から第2中間データ生成部303に入力される。第2中間データ生成部303は、データ格納部304に格納されている第1中間データから上記印刷条件に従って第2中間データを生成し(ステップ212)、データ格納部304に格納する。

【0032】このステップ212の処理の1つには、ユーザ入力部20から入力された被符号化データを機械可読符号として符号化したうえでこの機械可読符号を第1中間データに埋め込んで該第1中間データと同型式のデータ(第2中間データ)を生成する処理がある。また、他の1つとしては、ユーザ入力部20から入力された印刷パラメータ(N-up印刷、拡大/縮小印刷等)に基づいて第1中間データを当該第1中間データと同型式のN-up印刷、拡大/縮小印刷等用のデータ(第2中間データ)にデータ変換する処理がある。

【0033】次に、印刷データ生成部305は、データ格納部304内の第2中間データに蓄えられたデータからGDIコマンド列を再生し、このGDIコマンド列を印刷データとしてその印刷指示とともにプリンタドライバ40に送出する(ステップ213)。この処理に関しては、第2中間データが上述したWMFやEMFで構成される場合は、Windows APIによって印刷可能である。

【0034】プリンタドライバ40は、印刷データ生成部305から送られてくる印刷指示によりプリンタ50を起動し、上記印刷データ(GDIコマンド列)をプリンタ50に出力する(ステップ221)。更に、プリンタ50は上記印刷データをプリント出力する。

【0035】このように、本発明の印刷システムは、アプリケーション10とプリンタドライバ40との間(インタフェース上)に仮想プリンタドライバ30(アプリケーションにより実現される)を配置し、この仮想プリンタドライバ30において、アプリケーション10より印刷指示されたアプリケーションデータからGDIコードを再現可能な中間データをまず生成し、更にこの中間データを基にGDIコードを再生することにより印刷データを生成し、プリンタドライバ40に与えるようにしたものである。つまり、本発明の印刷システムにおい

て、仮想プリンタドライバ30は、アプリケーション側から見ればプリンタドライバに当たり、プリンタドライバ40側から見ればアプリケーションにあたるものである。このような仮想プリンタドライバ30を介在させることにより、印刷機能を備えた全てのアプリケーション10から、いかなるプリンタ50に対しても、機械読み取り符号の埋め込み印刷、N-up印刷若しくは拡大/縮小印刷等の種々の形態のプリンタ出力を実現できる。

【0036】次に、この印刷システムにおける印刷処理動作の具体例について図4に示すフローチャートを参照して詳述する。図5は、この図4に示すフローチャートに沿った印刷処理を説明するために用いる本印刷システムの概略構成図である。尚、この図4に示すフローチャートは、特に、ユーザより印刷指示された電子ファイルに機械可読符号を埋め込み印刷する場合の印刷処理に対応するものである。この場合、仮想プリンタドライバ30内の第2中間データ生成部303としては、図6に示す如く、コードデータ解析部3031、埋め込みデータ生成部3032、マージ処理部3033を具備したもの(符号303Aで表す)を用いる。

【0037】図5に示す如く、本印刷システムは、アプリケーション10と、プリンタ50を制御するプリンタドライバ40との間に仮想プリンタドライバ30が存在し、更に仮想プリンタドライバ30とアプリケーション10の間には、OS(オペレーティング・システム)が介在している。アプリケーション10は、当該アプリケーション10により生成された電子ファイルの印刷時、例えば同図上部に示すような印刷ダイアログを表示する機能を持つ。このアプリケーション10の印刷ダイアログにおいて、例えばプロパティを選択することにより、ユーザ入力部20のプリントダイアログがオープンする。このプリントダイアログは、例えば、図3に示す様なものである。ユーザは、このプリントダイアログを用いて、上記アプリケーション10から印刷しようとする電子ファイルの印刷パラメータや符号化しようとするデータ(被符号化データ)等を入力する。

【0038】上記アプリケーション10において、ある電子ファイルの編集を行っている間(ステップ401)、このアプリケーション10とプリンタ50との間に介在する仮想プリンタドライバ30及びプリンタドライバ40はそれぞれアイドル状態にある。この時、上記アプリケーション10の実行の制御を行うOSは、上記アプリケーション10より何等かのイベントが指示されたかどうかを監視している(ステップ411)。

【0039】この状態で、上記アプリケーション10より上記編集用の電子ファイルに対して印刷指示があると(ステップ402)、OSでは、イベントが発生しかつそのイベントが印刷指示であることを認識し(ステップ411YES)、仮想プリンタドライバ30に対して起動の指示を送出する(ステップ412)。これにより、

仮想プリンタドライバ30が起動状態となり、まず、初期化の処理を行い（ステップ421）、次いでプリンタドライバ40に起動指示を送出し（ステップ422）、その後、プリンタドライバ40からの初期化完了通知を待つ（ステップ423）。

【0040】これに対し、プリンタドライバ40は、仮想プリンタドライバ30からの起動指示により初期化の処理を行った後、初期化完了の通知を仮想プリンタドライバ30に返送する（ステップ431）。仮想プリンタドライバ30は、上記初期化完了通知を受けると（ステップ423YES）、OSに対して初期化完了を通知する。

【0041】一方、OSでは、上記仮想プリンタドライバ30への起動指令送出後、この仮想プリンタドライバ30から初期化完了通知があるかどうかを監視しており、この状態で仮想プリンタドライバ30より初期化完了通知を受け取ると（ステップ413YES）、当該仮想プリンタドライバ30の準備が完了したとの認識により、アプリケーション10に対して印刷準備完了通知を送出する（ステップ414）。

【0042】また、アプリケーション10では、ステップ402において印刷指示を発した後、OSの処理が完了したかどうかを監視しており、OSより印刷準備完了通知を受け取ることにより（ステップ403YES）、OSの処理が完了したと判断し、そのOSに対してコードデータを出力する（ステップ404）。

【0043】このコードデータを受け取ったOSでは、所定のコード処理サービスを実施し（ステップ415）、このサービス処理後のコードデータを仮想プリンタドライバ30に送出する。

【0044】上記ステップ404→ステップ415の処理は、上述した如く、アプリケーション10からの印刷指示に基づき図3に示す如くのプリントダイアログ（ユーザ入力部20）を表示し、上記印刷指示によりアプリケーション10から入力される印刷対象の文書ファイル内容（コードデータ）に対し、符号化しようとするコード（被符号化コード）や上記コードデータに対する印刷パラメータを上記プリントダイアログを用いてユーザにより入力する処理に相当する。これらアプリケーション10から入力するコードデータや上記プリントダイアログを用いて入力される被符号化コード及び印刷パラメータは、上記コード処理サービスを経て仮想プリンタドライバ30に出力される。

【0045】仮想プリンタドライバ30では、OSにおける上記ステップ415の処理により出力されたコードデータを受け取ると（ステップ424）、まず、第1中間データ生成部302により、その受け取ったコードデータを基に、その後の処理においてGDIコードに再現可能なフォーマットによって成る第1中間データを作成し（ステップ425）、データ格納部304に格納す

る。

【0046】また、仮想プリンタドライバ30の第2中間データ生成部303A（図6参照）では、OSから受け取った上記コードデータをコードデータ解析部3031で解析して該解析結果をマージ処理部3033に送出する一方、埋め込みデータ生成部3032でユーザ入力部20から入力された被符号化データに基づき上記印刷指示されたコードデータに埋め込むべき機械可読符号を生成し（ステップ426）、マージ処理部3033に送出する。

【0047】更に、マージ処理部3033は、データ格納部304から第1中間データを読み込んだ後、上記ステップ426で生成された機械可読符号をコードデータ解析部3031での解析結果及びユーザ入力部20から入力される印刷パラメータ等に応じて上記第1中間データにマージすることにより第2中間データを生成し（ステップ427）、データ格納部304に格納する。ここで、第2中間データは上記第1中間データと同様のフォーマットで構成されるものである。

【0048】その後、仮想プリンタドライバ30では、印刷データ生成部305により、上記第2中間データからGDIコマンド列を再生することにより印刷データを生成し、該印刷データを印刷指示とともにプリンタドライバ40に送出する（ステップ428）。

【0049】プリンタドライバ40は、仮想プリンタドライバ30から印刷指示及び印刷データ（GDIコマンド列）を受け取ると（ステップ432）、プリンタ50を起動して当該印刷データを出力する（ステップ434）。更に、プリンタ50はプリンタドライバ40から受け取った印刷データをプリント出力する。

【0050】プリンタ50への印刷データの送出後、プリンタドライバ40は、仮想プリンタドライバ30に対して印刷完了の通知を行う。仮想プリンタドライバ30は、プリンタドライバ40から上記印刷完了通知を受け取ると、プリンタドライバ40での処理が完了したものと認識し、OSに対して印刷完了の通知を行う（ステップ429）。

【0051】また、OSは、上記コード処理サービス実行後、仮想プリンタドライバ30の処理が完了したかどうかを監視しており、この監視中に仮想プリンタドライバ30から上記印刷完了通知を受け取ることにより（ステップ416）、仮想プリンタドライバ30の処理が終了したと判断し、動作を終了する（ステップ417）。また、その際、アプリケーション10に対しては、OS処理が完了したことを通知し、以後、上記のイベント監視ループに戻る。他方、アプリケーション10では、上記コードデータの出力後、OS処理が完了したかどうかを監視し、OSからの上記OS処理完了通知を受け取ることにより（ステップ405）、一連の印刷処理を終了する。

10

20

30

40

50

【0052】上記一連の処理の説明からも分かるように、仮想プリンタドライバ30は、ステップ424～428において以下の(a)～(c)の処理を行っている。

【0053】(a)アプリケーション10から印刷指示のあった電子ファイルからGDIコードにより再生可能な第1中間データを生成する。

【0054】(b)上記印刷指示に伴って入力される被符号化データから機械可読符号を生成した後、この機械可読符号を上記第1中間データにマージすることにより当該第1中間データと同じフォーマットの第2中間データを生成する。

【0055】(c)第2中間データからGDIコード列を再生することにより印刷データを生成し、プリンタドライバ40に印刷指示する。

【0056】この(a)～(c)の処理後の印刷データにはユーザ入力部20からユーザによって設定された機械可読符号がマージされているから、この印刷データをプリンタドライバ40を通じてプリンタ50でプリント出力することにより、上記アプリケーションデータに上記機械可読符号が埋め込み印刷されたプリント出力を得ることができる。

【0057】一例として、図7は、ワープロ、スプレッドシート、ドローイングツールの各アプリケーション(10)からそれぞれの電子ファイルに機械可読符号(同図塗りつぶし部分)を埋め込み印刷する場合の印刷イメージを示したものである。

【0058】この場合の印刷処理において、まず、ユーザが上記各アプリケーション10で電子ファイルの印刷を実行すると、図3に示す如くのプリントダイアログが表示される。ここで、機械可読符号として符号化したいデータ(被符号化データ)を入力する。特に、図3におけるダイアログ上では、データ型として「整数」、値として「1234567890」を符号化する例を示している。被符号化データを入力した後、ダイアログ上の「OK」ボタンを押すと、仮想プリンタドライバ30内で上記被符号化データの符号化が行われ、この符号化データが第1中間データにマージされて第2中間データが生成された後、更にこの第2中間データがGDIコード列により再現された印刷データとなってプリンタドライバ40に渡され、プリンタ50により図7に示すような符号化データが埋め込み印刷されたプリント出力を得ることができる。

【0059】このように、アプリケーション10とプリンタドライバ40間に配置されてGDIコード列により再生可能な中間データ上で機械可読符号の埋め込みを行う仮想プリンタドライバ30を有する本発明の構成によれば、印刷機能を備えるアプリケーション10であれば、図7に示したようなワープロ、スプレッドシート、ドローイングツールなどの全てのアプリケーションか

ら、その中の電子ファイルに対して、いかなるプリンタ50を用いた場合にも機械可読符号の埋め込み印刷が行えるようになる。

【0060】なお、この印刷システムで埋め込み印刷する機械可読符号としては、バーコードやデータグリフ等を用いることができる。また、この機械可読符号のコンテンツとしては、後述するように、印刷対象の電子ファイルをサーバに登録する際の登録IDが考えられる。この場合、機械可読符号を埋め込み印刷した出力用紙上で、スキャナにより上記機械可読符号を読み取り走査し、その読み取り結果から登録IDを認識して上記サーバから当該登録IDに対応する電子ファイルを検索する等の運用が可能となる。

【0061】機械可読符号のこの他の例としては、印刷された電子ファイルの識別子、該電子ファイルの供給元ホスト装置名、該電子ファイルを作成したOS名あるいはユーザ名、該電子ファイルの印刷日時やページ数等、様々な情報が考えられる。更には、出力用紙上に印刷された電子ファイルに対して「重要」、「極秘」等の文字をすかし印刷(Watermark)するなどといった用途にも適用できる。

【0062】また、この例では、第1中間データに予め機械可読符号をマージして第2中間データを生成した後にプリンタドライバ40に送出するようにしているが、この処理の代わりに、プリンタドライバ40に印刷指示を送る処理の中で、機械可読符号をGDIコマンド列として送出するようにしても良い。

【0063】ところで、上記機械可読符号の埋め込み印刷処理は、アプリケーションデータそのもののデータ変換を行わず、このアプリケーションデータにサーバ登録ID等の付加情報を加えて印刷する処理である。この他、本発明の印刷システムは、アプリケーションデータそのものをデータ変換して印刷出力する構成とすることもできる。このようなデータ変換を伴う印刷処理の例としては、N-up印刷、拡大若しくは縮小印刷等が考えられる。また、仮想プリンタドライバ30で利用可能なフォーマットを有する何等かのファイルを生成する等の処理もこれに相当する。このような印刷処理機能を付加するには、例えば、仮想プリンタドライバ30内の第2中間データ生成部303として、図8に示す如く、コードデータ解析部3031及びデータ変換部3034を具備したもの(符号303Bで表す)を用いれば良い。

【0064】仮想プリンタドライバ30内に第2中間データ生成部303Bを採用して成る印刷システムにおける印刷処理について以下に簡単に説明する。なお、この場合の印刷システムでの印刷処理は、機械可読符号等の付加情報を埋め込み印刷する印刷システムでの図4に示すフローチャートに沿った処理のうち、仮想プリンタドライバ30によるステップ424からステップ427の処理を以下に述べるような処理に置換することにより実

現できる。

【0065】今、図8に示す如くの第2中間データ生成部303Bを用いた印刷システムにおいて、アプリケーション10から印刷指示がなされた後、プリントダイアログ（図3参照）上で、N-up印刷が指示されたものとする。このプリントダイアログによる設定操作が完了すると、アプリケーション10からはこの時に印刷指示された電子ファイルのコードデータが、またユーザ入力部20からは上記N-up印刷を指示する印刷パラメータがそれぞれ仮想プリンタドライバ30に入力される。

【0066】仮想プリンタドライバ30では、アプリケーション10から入力されるコードデータを受け取ると、まず、第1中間データ生成部302により、その受け取ったコードデータを基に、その後の処理においてGDIコードに再現可能なフォーマットによって成る第1中間データを作成し、データ格納部304に格納する。

【0067】また、仮想プリンタドライバ30の第2中間データ生成部303B（図8参照）では、アプリケーション10から受け取った上記コードデータをコードデータ解析部3031で解析して該解析結果をデータ変換部3034に送出する一方、ユーザ入力部20から入力された印刷パラメータを当該データ変換部3034に取り込む。

【0068】その後、データ変換部3034は、データ格納部304から第1中間データを読み込んだ後、コードデータ解析部3031での解析結果を参照しながら、ユーザ入力部20から入力された印刷パラメータに従って上記第1中間データをN-up印刷用のデータに変換することにより第2中間データを生成し、データ格納部304に格納する。

【0069】更に、仮想プリンタドライバ30では、印刷データ生成部305により、上記第2中間データからGDIコマンド列を再生することにより印刷データを生成し、該印刷データを印刷指示とともにプリンタドライバ40に送出する。

【0070】プリンタドライバ40は、仮想プリンタドライバ30から印刷指示及び印刷データ（GDIコマンド列）を受け取ると、プリンタ50を起動して当該印刷データを出力し、更に、プリンタ50はプリンタドライバ40から受け取った印刷データをプリント出力する。

【0071】図8は、上記印刷処理に基づくプリント出力例を示したものである。この例では、例えば、2ページから成る電子ファイルに対して1-up印刷が指示された場合には、これら各通ページの電子ファイルが個々の（2枚の）出力用紙にそれぞれ通常印刷され、上記電子ファイルに対して2-up印刷が指示された場合には、上記2ページ分の電子ファイルが1枚の出力用紙に印刷されている。

【0072】このN-up印刷の他、縮小／拡大印刷、あるいは仮想プリンタドライバ30で用いたための何等か

のデータを得る場合等に際しても同様の処理により対処可能である。

【0073】なお、先に述べた例では、印刷指示されたアプリケーションデータに付加情報を付加して印刷する処理と、該アプリケーションデータをN-up印刷や縮小あるいは拡大印刷用のデータに変換する処理とを別々に実施するものについて述べたが、これらの処理を併用したシステム構成も可能である。

【0074】次に、本発明の他の実施の形態について説明する。図10は本発明の他の実施の形態に係わる印刷システムの概略構成を示すブロック図であり、図1に示した印刷システムの各部と同様の機能を果たす部分には同一の符号を付している。

【0075】この印刷システムにおいて、仮想プリンタドライバ30Aには、アプリケーション10から印刷指示されたアプリケーションデータの印刷時、該印刷処理以外の処理の制御を行う非印刷処理制御部306が設けられている。この非印刷処理制御部306は、所定のインタフェースを介してサーバ60などの外部装置と接続されている。この印刷システムの概略動作について図11に示すフローチャートを参照して説明する。尚、この図11に示すフローチャートにおいても、図1に示したシステムでの処理と同様の処理については同一の符号を付している。

【0076】この印刷システムにおいて、アプリケーション10から任意の電子ファイルを印刷しようとする場合、ユーザがその印刷しようとする電子ファイルに対する印刷指示を発行する（ステップ201）。この印刷指示が発行されることにより、ユーザ入力部20では、例えば図3に示すようなプリントダイアログを表示し、上記印刷指示のなされた電子ファイルに関連する印刷条件の設定を受け付ける処理に移行する（ステップ202）。

【0077】また、この印刷システムでは、上記プリントダイアログとは別のダイアログ（図示せず）を用いて、あるいは所定の入力機能によって、上記印刷指示した電子ファイルに対する印刷処理以外の非印刷処理の起動指示を発行する（ステップ203）。

【0078】上記印刷条件設定操作及び上記非印刷処理起動指示操作が完了すると、上記アプリケーション10からは上記印刷指示のなされた電子ファイルのコードデータが、また上記ユーザ入力部20からはユーザにより設定されたN-up印刷等の印刷パラメータや被符号化データがそれぞれ仮想プリンタドライバ30に入力される。この時、ユーザ入力部20から入力される情報には上記非印刷処理起動指示情報も含まれる。

【0079】仮想プリンタドライバ30Aでは、まず、第1中間データ生成部302において、アプリケーション10から送られてくる上記コードデータから第1中間データを生成し（ステップ211）、データ格納部30

10

20

30

40

50

4に格納する。一方、ユーザが設定した上記印刷条件情報は、ユーザ入力部20から第2中間データ生成部303に入力される。第2中間データ生成部303は、データ格納部304に格納されている第1中間データ生成部303から上記印刷条件に従って第2中間データを生成し(ステップ212)、データ格納部304に格納する。

【0080】次に、印刷データ生成部305は、データ格納部304内の第2中間データに蓄えられたデータからGDIコマンド列を再生し、このGDIコマンド列を印刷データとしてその印刷指示とともにプリンタドライバ40に送出する(ステップ213)。

【0081】プリンタドライバ40は、印刷データ生成部305から送られてくる印刷指示によりプリンタ50を起動し、当該印刷指示とともに送られてくる印刷データ(GDIコマンド列)をプリンタ50に出力する(ステップ221)。更に、プリンタ50はその印刷データをプリント出力する。

【0082】また、ステップ213における印刷指示の送出後、仮想プリンタドライバ30Aの制御部301では、ユーザ入力部20から非印刷処理の起動指示が入力されているか否かをチェックし(ステップ214)、当該起動指示が入力されていない場合(ステップ214NO)、処理を終了する。これに対し、非印刷処理の起動指示が入力されている場合(ステップ214YES)、非印刷処理制御部306を起動し、当該起動指示がなされている非印刷処理を実行する(ステップ215)。

【0083】図10に示す印刷システムにおいて、例えば、アプリケーションデータの印刷処理とともに当該データをサーバ60に登録する場合には、上記ステップ203において、非印刷処理起動指示として「サーバ登録」を意味する指示情報を入力する。この時、仮想プリンタドライバ30Aの制御部301では、上記ステップ214において当該指示情報を基に「サーバ登録」が起動指示されていることを認識し、非印刷処理制御部306に対してサーバ登録起動の通知を行う。非印刷処理制御部306は、上記通知を受け取ることにより、データ格納部304に格納されている第2中間データを読み出し、当該第2中間データを例えば上記プリントダイアログを用いて指定された登録IDを付加してサーバ60に登録する。

【0084】この他、外部装置としてメールサーバやファクシミリ装置を接続しておき、非印刷処理制御部306にこれら外部装置の制御機能を付加しておけば、アプリケーション10からの印刷指示により該当する電子ファイルを印刷しながら、当該電子ファイルをメールサーバを通じてメール送信したり、あるいは当該電子ファイルをファクシミリ装置に転送して相手先にファクシミリ送信する等の様々な処理に対応できる。

【0085】

【発明の効果】以上説明したように、本発明によれば、アプリケーションから印刷指示されたアプリケーションデータからプリンタの印刷処理に適合する印刷データを再現し得る中間データを生成し、更にこの中間データから上記印刷データを再生してプリンタに送出するようにしたため、印刷機能を有する様々なアプリケーションのデータをいかなるプリンタからもプリント出力することができる。

【0086】また、本発明では、上記中間データ上で機械可読符号をマージする処理機能を付加したため、アプリケーションデータに機械可読符号を埋め込んでプリントする場合にも、プリンタを選ばずに当該プリント出力が行える。

【0087】また、本発明では、アプリケーションから印刷指示されたアプリケーションデータを上記中間データ上でデータ変換する機能を付加したため、上記アプリケーションデータに対してNup、拡大/縮小プリント等を行う場合にも、プリンタを選ばずに当該プリント出力が行えるようになる。

【0088】更に、本発明では、印刷データ作成処理を行いながら非印刷処理動作を実行する機能を付加したため、アプリケーションデータの印刷処理と並行してこのアプリケーションデータに関するサーバ登録やファクシミリ送信等の非印刷処理動作を実行できるようになる。

【図面の簡単な説明】

【図1】本発明の一実施の形態に係わる印刷システムの概略構成図。

【図2】図1における印刷システムの印刷処理動作を示すフローチャート。

【図3】印刷条件の設定に用いるプリントダイアログの一例を示す図。

【図4】符号埋め込み印刷時におけるシステム全体の処理動作を示すフローチャート。

【図5】図4に示す処理動作を説明するために用いる本印刷システムの概略構成図。

【図6】符号埋め込み印刷に適応する第2中間データ生成部の構成を示す図。

【図7】符号埋め込み印刷時のプリント出力イメージを示す図。

【図8】データ変換を伴う印刷処理に適応する第2中間データ生成部の構成を示す図。

【図9】データ変換を伴う印刷処理時のプリント出力例を示す図。

【図10】本発明の他の実施の形態に係わる印刷システムの概略構成図。

【図11】図10における印刷システムの印刷処理動作を示すフローチャート。

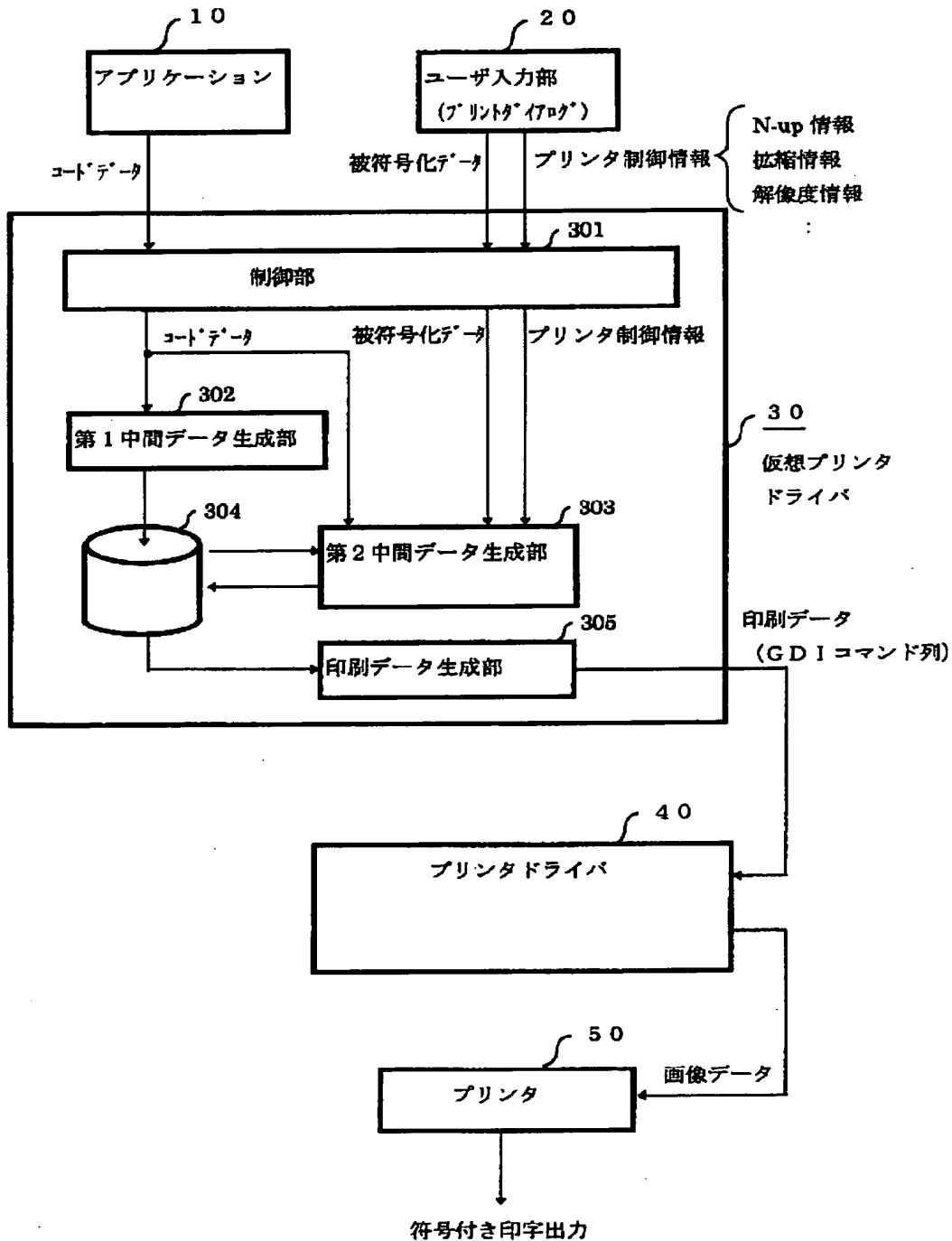
【符号の説明】

10…アプリケーション、20…ユーザ入力部(プリントダイアログ)、30、30A…仮想プリンタドライ

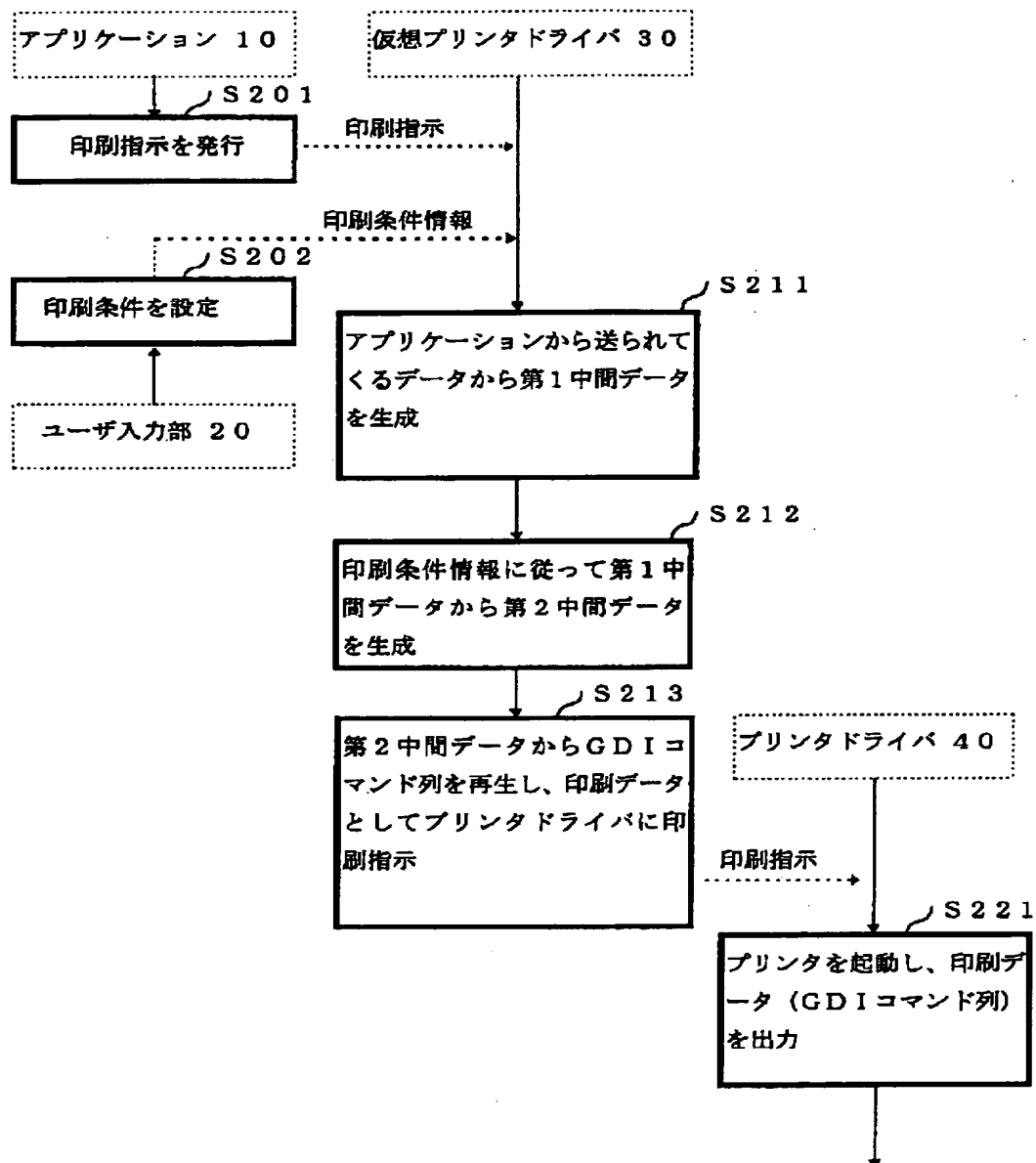
バ、301…制御部、302…第1中間データ生成部、
303, 303A, 303B…第2中間データ生成部、
3031…コードデータ解析部、3032…埋め込みデ
ータ生成部、3033…マージ処理部、3034…デー

タ変換部、304…データ格納部、305…印刷データ
生成部、306…非印刷処理制御部、40…プリンタド
ライバ、50…プリンタ、60…サーバ

【図1】



【図2】



【図3】

プリントダイアログ

用紙サイズ
☒ A4 ☐ B4 ☐ A3

Nアップ
☐ 1アップ ☐ 2アップ ☐ 3アップ

縮小率

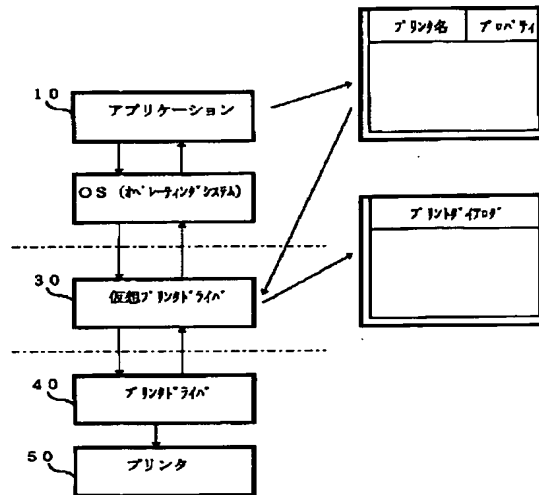
用紙の向き
☒ 縦 ☐ 横

余白
 左 右
 上 下

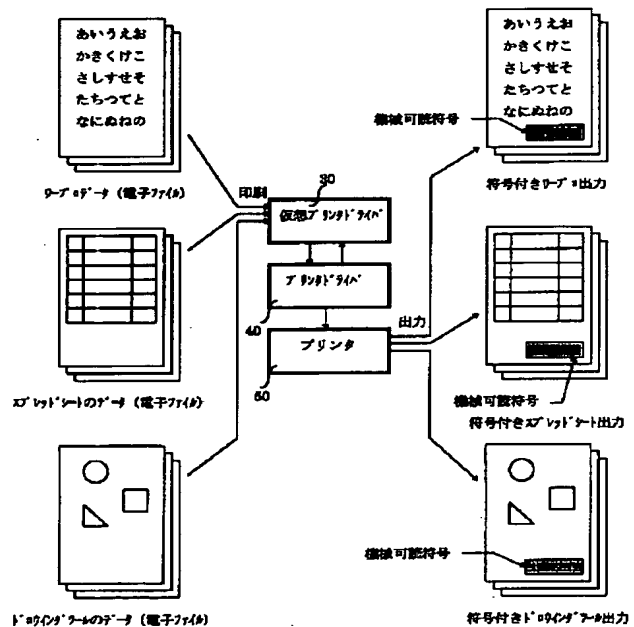
符号化するデータ
 データ型
☐ 文字列
☒ 整数
☐ 実数
☐ URL

値

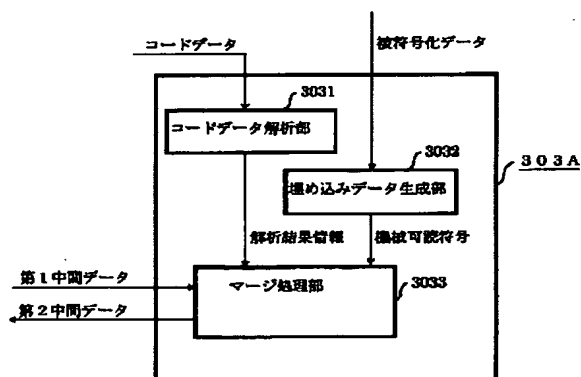
【図5】



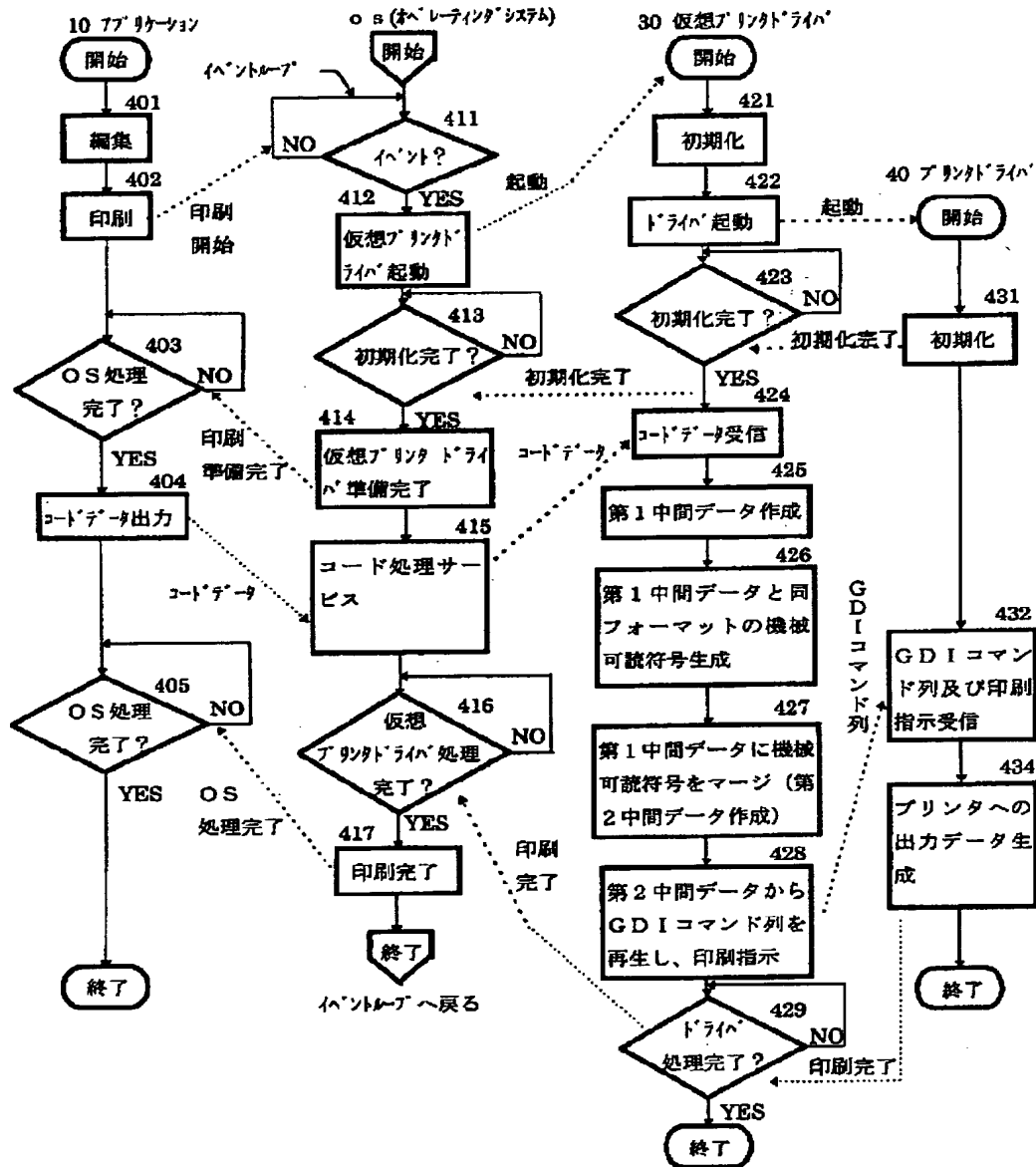
【図7】



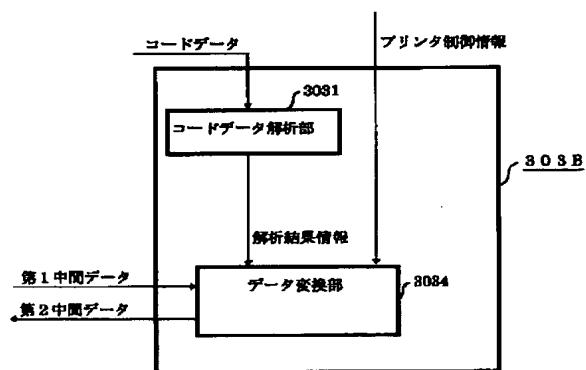
【図6】



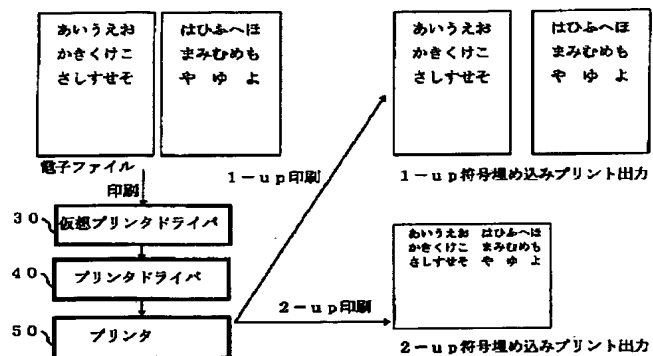
【図4】



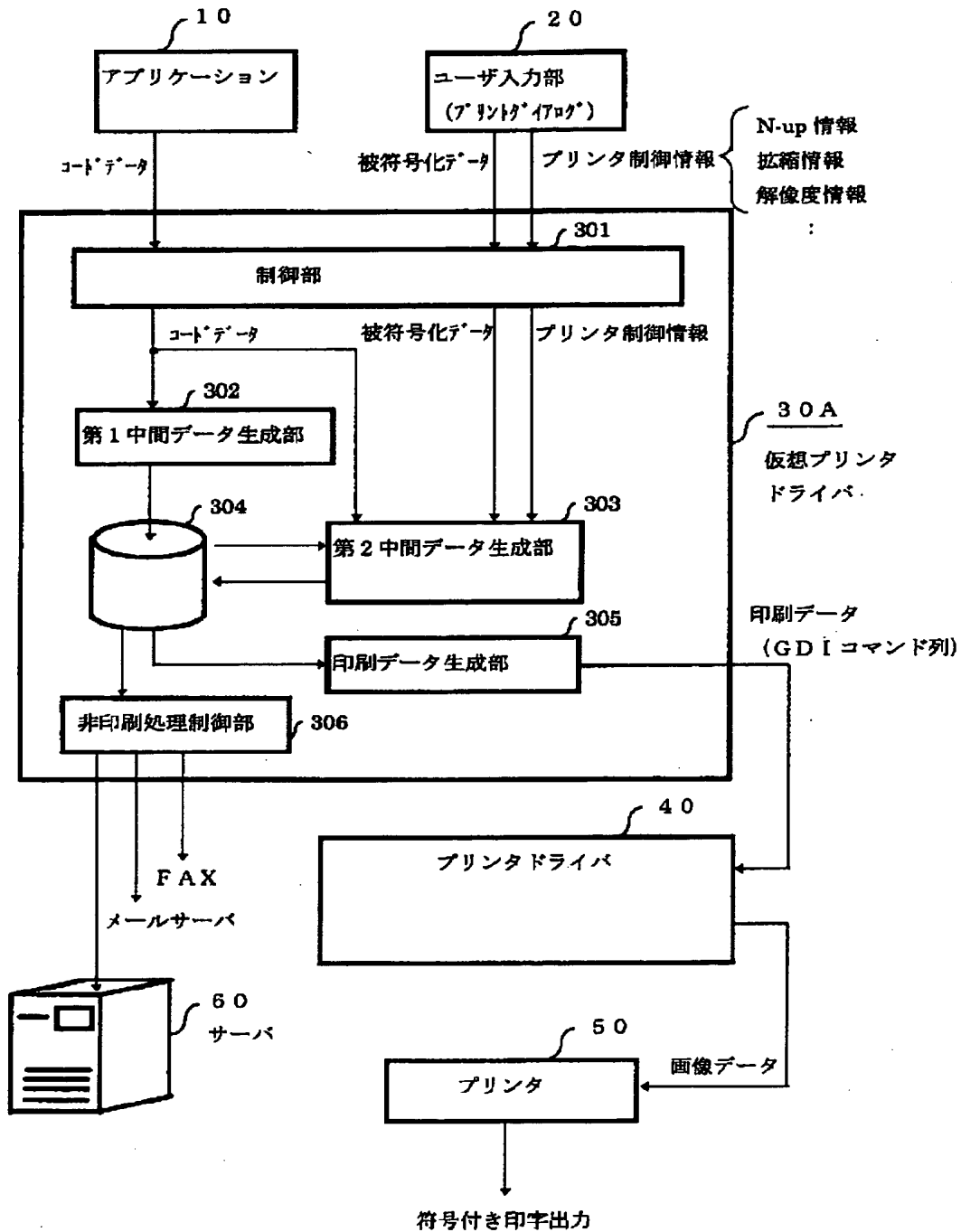
【図8】



【図9】



【図10】



【図11】

